The New England
Journal of Medicine

VOLUME 204 MAY 14, 1931 NUMBER 20

The Massachusetts Medical Society

PROGRAM OF THE ONE HUNDRED AND FIFTIETH ANNIVERSARY

THE Exercises of the Sesquicentennial Anniversary will be held on Monday, Tuesday, and Wednesday, June 8, 9, and 10, in the Hotel Statler, Boston.

WALTER L. BURRAGE, *Secretary.*

May 8, 1931.

STANDING COMMITTEES

Of Arrangements

H. Q. Gallupe, T. H. Lanman, F. H. Colby, G. P. Reynolds, W. M. Shedden.

On Publications

Homer Gage, J. W. Bartol, R. I. Lee, R. B. Osgood, E. W. Taylor.

On Membership and Finance

D. N. Blakely, Algernon Coolidge, Gilman Osgood, G. C. Caner, J. E. Fish.

On Ethics and Discipline

David Cheever, W. D. Ruston, S. F. McKeen, A. C. Smith, R. L. DeNormandie.

On Medical Education and Medical Diplomas

P. P. Johnson, H. P. Stevens, C. H. Lawrence, C. A. Sparrow, E. S. Calderwood.

On State and National Legislation

R. B. Greenough, T. J. O'Brien, F. E. Jones, Shields Warren, A. W. Marsh.

On Public Health

Dwight O'Hara, E. F. Cody, F. G. Curtis, G. N. Hoeffel.

On Malpractice Defense

F. G. Balch, E. D. Gardner, F. B. Sweet, R. P. Watkins, A. W. Allen.

Special Committee for the One Hundred and Fiftieth Anniversary

Fred B. Lund, *Chairman;* John W. Bartol, Enos H. Bigelow, John M. Birnie, Walter P. Bowers, David Cheever, H. Quimby Gallupe, Joseph Garland, Leland S. McKittrick, George C. Shattuck, Henry R. Viets, Samuel B. Woodward, Alfred Worcester, Walter L. Burrage, *Secretary.*

DELEGATES AND ALTERNATES TO THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

Delegates

H. G. Stetson, Greenfield; C. E. Mongan, Somerville; J. F. Burnham, Lawrence; W. H. Robey, Boston; E. F. Cody, New Bedford; R. I. Lee, Boston.

Alternates

W. C. Leary, Springfield; L. S. McKittrick, Boston; E. L. Hunt, Worcester; Cadis Phipps, Brookline; P. E. Truesdale, Fall River; C. H. Lawrence, Jr., Boston.

GENERAL INFORMATION

All members of the medical profession are cordially invited to attend the One Hundred and Fiftieth Anniversary Meeting of the Society. It is hoped that there will be the largest attendance in the history of the Society. No effort has been spared to make this the best and most interesting of all the meetings.

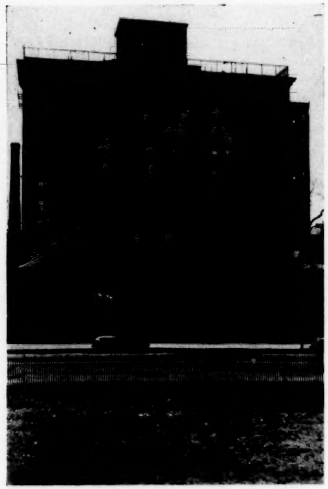
A Bureau of Information will be maintained at the Registration Desk on the mezzanine floor of the Hotel Statler, close to the commercial exhibit space in the Ball Room Assembly. There will be a private wire at the bureau for the reception of calls for attending physicians. Physicians expecting to receive calls should leave their names and destinations with the attendant.

Fellows are requested to register as soon as they arrive and to get their tickets for the Annual Dinner and the Wednesday Luncheon. The charge for the Annual Dinner is $3.00 to those

who are not in arrears and the Wednesday Luncheon will be without charge to those whose dues have been paid. All the activities of the meeting on Tuesday and Wednesday are in the Hotel Statler. On Monday, the first day of the meeting, there will be medical and surgical clinics at the Massachusetts General Hospital, Fruit Street, West End, from 9 to 12, and in the Hotel there will be commercial exhibits, a fracture exhibit, a cancer exhibit, and a series of talking motion pictures.

Exhibits The entire Ball Room Assembly of the Hotel will be used for the commercial exhibits which the committee hopes will prove of great interest.

Boston Medical Library. During the three days of the meeting, the Fellows are invited to



BAKER MEMORIAL,
MASSACHUSETTS GENERAL HOSPITAL.

inspect the recently completed committee rooms for the Society and the new offices of the official organ of the Society, the *New England Journal of Medicine*, on the ground floor of the Boston Medical Library, at 8 The Fenway.

MONDAY MORNING, JUNE 8, 9 O'CLOCK

Medical and Surgical Clinics at the Massachusetts General Hospital, Fruit Street, West End.

MASSACHUSETTS GENERAL HOSPITAL

Medical Program

Monday, June 8, 1931

Ether Dome

9:00-9:30—Clinic on Diseases of the thorax.
Dr. F. T. Lord.

9:30-10:00—Clinic on Thyroid disturbances.
Dr. J. H. Means.

10:00-10:30—Ovarian dysfunctions.
Dr. Fuller Albright.

10:30-11:00—Some newer aspects of the treatment of heart disease.
Dr. P. D. White.

11:00-11:30—Neurological clinic.
Dr. J. B. Ayer.

11:30-12:00—Pediatric clinic.
Dr. H. L. Higgins.

MASSACHUSETTS GENERAL HOSPITAL

Monday, June 8, 1931

Surgical Amphitheatre

9:00-12:00—Operations by the Staff.

Clinical Program by the Following Special Clinics and Services

10:30-10:45—Tumor Clinic.
10:45-11:00—Genito-Urinary Service.
11:00-11:15—Peripheral Circulatory Clinic.
11:15-11:30—Thoracic Clinic.
11:30-11:45—Fracture Service.

COMMERCIAL EXHIBITS, HOTEL STATLER

(See diagram, Page 1019)

Booth No.

1—Mellin's Food Company of North America—177 State Street, Boston, Mass.

2—General Electric X-Ray Corporation—711 Boylston Street, Boston, Mass., and 2012 Jackson Blvd., Chicago, Illinois.

3—E. F. Mahady Company—851-857 Boylston Street, Boston, Mass.

4—E. F. Mahady Company—851-857 Boylston Street, Boston, Mass.

5—Hanovia Chemical and Manufacturing Company—Chestnut Street and N. J. R. R. Avenue, Newark, New Jersey.

6—Association of Certified Milk Producers of Metropolitan Boston—66 Commonwealth Avenue, Boston, Mass.

7—Association of Certified Milk Producers of Metropolitan Boston—66 Commonwealth Avenue, Boston, Mass.

8—George H. Crosbie—79 Milk Street, Boston, Mass.

9—The E. L. Patch Company—Stoneham, Mass.

10 and 10A—See Scientific Exhibits. (Page 1019.)

11—*Medical Times* and *Long Island Medical Journal*—95 Nassau Street, New York City.

12—General Foods Corporation—Postum Building, 250 Park Avenue, New York City.

12A—The C. E. Bailey Company—98 Brookline Avenue, Boston, Mass.

13—Gerber Products Division, Fremont Canning Company—Fremont, Michigan.

13A—The DeVilbiss Company—Toledo, Ohio.

14—Horlick's Malted Milk Corporation—Racine, Wisconsin.

26—Mead Johnson & Company—Evansville, Indiana.

27—New England X-Ray Corporation—30 Huntington Avenue, Boston, Mass.

28—Davies Rose & Co., Ltd.—22 Thayer Street, Boston, Mass.

29—Tailby Nason Company—49 Amherst Street, Boston, Mass.

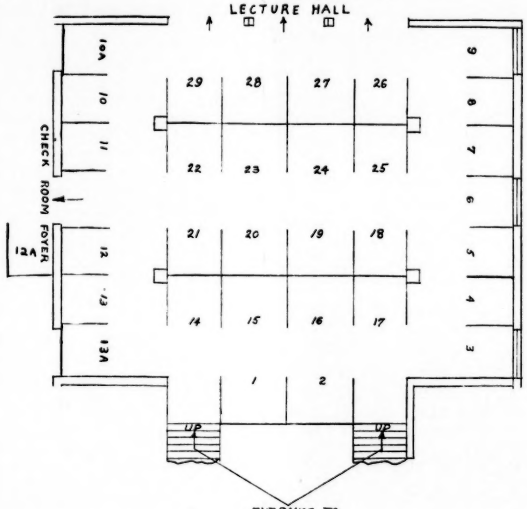


DIAGRAM OF THE HALL IN WHICH SCIENTIFIC AND COMMERCIAL EXHIBITS WILL BE SHOWN.

15—Charles W. Broadbent Company—665 Huntington Ave., Boston, Mass.

16—E. R. Squibb & Sons—745 Fifth Avenue, New York City.

17—The Medical Protective Company—360 North Michigan Boulevard, Chicago, Illinois.

18—The MacMillan Company, Publishers—60 Fifth Avenue, New York City.

19—General X-Ray Co.—285 Columbus Avenue, Boston, Mass.

20—The Chas. H. Phillips Chemical Co.—170 Varick Street, New York City.

21—Kalak Water Company of New York, Inc.—6 Church Street, New York City.

22—Petrolagar Laboratories Inc.—536 Lake Shore Drive, Chicago, Illinois.

23—American Optical Company—110 Tremont Street, Boston, Mass.

24 and 25—See Scientific Exhibits elsewhere on this page.

SCIENTIFIC EXHIBITS, HOTEL STATLER

(*See diagram*)

10 and 10A—Cancer Exhibit.

24 and 25—Fracture Exhibit.

TALKING MOTION PICTURES IN THE BALL ROOM

9:00- 9:45 Diagnosis and Treatment of Infections of the Hand*.
Discussion—Dr. Irving Walker.

10:00-10:15 Suspension of the Uterus for Retrodisplacement.
Discussion—Dr. Frank A. Pemberton.

10:30-11:05 Salpingectomy and High Fundic Amputation for Residues of Tubal Disease.
Discussion — Dr. Samuel R. Meaker.

11:20-11:55 Sub-Total Abdominal Hysterectomy for Uterine Fibroids.
Discussion—Dr. Louis E. Phaneuf.

*Not a "Talkie".

12:10-12:45 Vaginal Hysterectomy for Uterine Prolapse.
Discussion — Dr. Arthur F. Edgelow.

1:00-1:35 Anatomy of the Female Pelvis and Perineum.
Discussion — Dr. John Thomas Williams.

1:50-2:20 Spinal Anaesthesia.*
Discussion—Dr. Frank Richardson.

2:30-2:45 Experimental Gastro-enterostomy.
Discussion — Dr. Howard M. Clute.

*Not a "Talkie".

MONDAY AFTERNOON, JUNE 8, 1 O'CLOCK

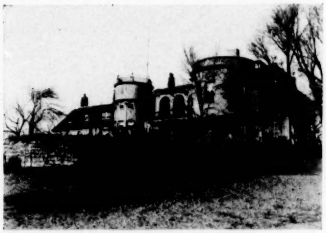
Hotel Statler, Ball Room

TALKING MOTION PICTURES

(See foregoing Program)

4 O'CLOCK

Lawn Fête and tea at the estate of Mr. Larz Anderson, 69 Avon Street, corner of Pond Street and Goddard Avenue, Brookline. Transportation from the Hotel will be provided.



LARZ ANDERSON HOME.

MONDAY EVENING, JUNE 8, 8:30 O'CLOCK

Museum of Fine Arts, 479 Huntington Avenue

MUSEUM OF FINE ARTS.

THE SHATTUCK LECTURE

By Dr. Alexander Primrose, Dean and Professor of Clinical Surgery, University of Toronto.

Subject: *The Evolution of Modern Surgery.*

PROFESSOR ALEXANDER PRIMROSE, C.B., M.B., C.M. (Edinburgh), F.R.C.S. (England), LL.D. (Edinburgh), who will deliver the Shattuck Lecture, is Consulting Surgeon to the Toronto General Hospital and Consulting Surgeon to the Hospital for Sick Children. He is Dean of the Faculty of Medicine and Professor of Clinical Surgery in the University of Toronto.

He has been a frequent contributor to the proceedings of the American Surgical Association, of which he has been a member since 1908. He was vice-president of the Association in 1922 and 1926 and at the meeting in Philadelphia in 1930 he was elected president.

It is interesting to note that at the 100th anniversary of the Massachusetts Medical Society in 1881 Dr. Samuel D. Gross, the founder and first president of the American Surgical Association, honored the Society with his presence and spoke at the dinner. The American Surgical Association was founded in 1880 and celebrated its 50th anniversary at the Philadelphia meeting last year.

The Shattuck Lecture will be followed at 9.30 o'clock by a reception to the officers of the Society and the invited guests.

TUESDAY MORNING, JUNE 9, 9 O'CLOCK

Hotel Statler, Ball Room

SECTION OF MEDICINE

Officers of the Section

Dr. Cadis Phipps, Brookline, *Chairman.*
Dr. F. Dennett Adams, Boston, *Secretary.*

1. *History of the Section of Medicine of the Massachusetts Medical Society.*
   By Dr. William Pearce Coues, Boston.

2. *The Treatment of Heart Disease in General Practice.*
   By Dr. Laurence D. Chapin, Springfield.
   Discussion to be opened by: Dr. Samuel A. Levine, Boston, and Dr. Erwin C. Miller, Worcester.

3. *The Treatment of Scarlet Fever.*
   By Dr. Edwin H. Place, Boston.
   Discussion to be opened by: Dr. Martin J. English, Boston, and Dr. Conrad Wesselhoeft, Boston.

4. *The Value of Alcohol in Therapeutics.*
   By Dr. Timothy Leary, Jamaica Plain.
   Discussion to be opened by: Dr. Thomas J. O'Brien, Boston, and Dr. Charles H. Lawrence, Jr., Boston.

5. *The Serum Treatment of Pneumonia.*
   By Dr. George H. Bigelow, Boston.
   Discussion to be opened by: Dr. Frederick T. Lord, Boston, and Dr. Francis W. Palfrey, Boston.

TUESDAY MORNING, JUNE 9, 9 O'CLOCK

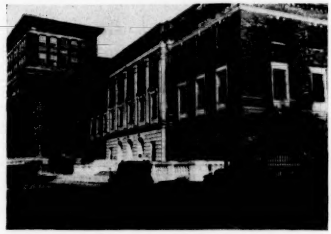
Hotel Statler, Georgian Room

SECTION OF RADIOLOGY AND PHYSIOTHERAPY

Officers of the Section

Dr. Arthur H. Ring, Arlington Heights, *Chairman.*
Dr. Ralph D. Leonard, Melrose, *Secretary.*

1. *Physical Therapy in Retrospect.*
   By Dr. William D. McFee, Haverhill.
2. *The Treatment of Mental Disease by Physical Methods.*
   Etiology, pathology, and treatment, including diathermy, sine wave, actinic ray, colonic irrigation.
   By Dr. John A. Holland, Trenton, N. J.



BOSTON CITY HOSPITAL.

3. *Electro-thermal Treatment of Paresis.*
   A study based on work done at the Worcester State Hospital; clinical and laboratory observations; results obtained to date.
   By Dr. Clifton T. Perkins, Worcester.
4. *The Value of Hysterosalpingography.*
   Observations of 1,000 cases demonstrating the diagnostic value of this method in various gynecological conditions, as follows:
   (a) Pelvic tumors, (b) Inflammatory changes, (c) The rôle of uterotubography in sterility and its therapeutic effects, (d) Pregnancy, (e) Description of apparatus and technic of lipiodol injection. (Lantern slide demonstration.)
   By Dr. Samuel A. Robins, Roxbury.
5. *Roentgen Examination for Peptic Ulcer.*
   Special reference is given to those cases presenting unusual difficulties in diagnosis.
   By Dr. Richard Dresser, Chestnut Hill.

TUESDAY, JUNE 9, 11:30 O'CLOCK

Hotel Statler, Small Dining Room
(near Georgian Room)

ANNUAL MEETING OF THE SUPERVISING CENSORS

12 NOON

Hotel Statler, Georgian Room

ANNUAL MEETING OF THE COUNCIL

(Notices with the order of business will be mailed to Councilors on June 2.)

TUESDAY AFTERNOON, JUNE 9, 2:30 O'CLOCK

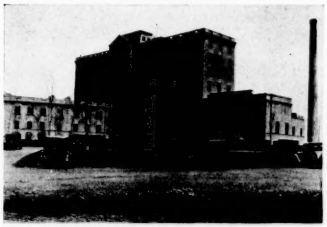
Hotel Statler, Ball Room

SECTION OF OBSTETRICS AND GYNECOLOGY

Officers of the Section

Dr. Alonzo K. Paine, Boston, *Chairman.*
Dr. Frederick J. Lynch, Boston, *Secretary.*

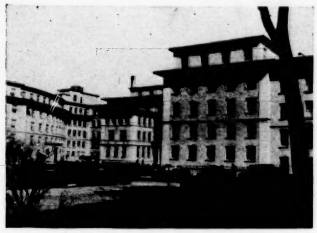
1. *Post Partum Care.*
   By Dr. J. P. Greenhill, Chicago, Associate in Obstetrics, Northwestern University Medical School; Attending Obstetrician, Chicago Lying-In Hospital and Dispensary; Attending Gynecologist, Cook County Hospital.
   Discussion to be opened by: Dr. Frederick C. Irving, Professor of Obstetrics, Harvard Medical School; Dr. William A. Ham, Professor of Clinical Obstetrics, Boston University School of Medicine; and Dr. Harold V. Hyde, Instructor in Obstetrics, Tufts College Medical School.



BETH ISRAEL HOSPITAL.

2. *Symposium on the Relief of Pain During Labor.*
   By Dr. Charles D. McCann, Obstetrician, Brockton Hospital; Dr. Joseph W. O'Connor, Obstetrician, The Memorial Hospital, Worcester; Dr. Albert E. Parkhurst, Physician to the Beverly Hospital; and Dr. Edward F. Shay, Visiting Obstetrician and Gynecologist, Fall River General and Union Hospitals.
   Discussion to be opened by: Dr. Joseph P. Cohen, Visiting Obstetrician and Gynecologist, Boston City Hospital; Dr. Delos J. Bristol, Jr., Instructor in Obstetrics, Harvard Medical School; Dr.

William J. McDonald, Instructor in Obstetrics, Tufts College Medical School; and Dr. Marjorie Woodman, Instructor in Obstetrics, Tufts College Medical School.



BOSTON LYING-IN HOSPITAL.

TUESDAY AFTERNOON, JUNE 9, 2:30 O'CLOCK

Hotel Statler, Georgian Room

SECTION OF TUBERCULOSIS

Officers of the Section

Dr. Sumner H. Remick, Waltham, *Chairman.*
Dr. Roy Morgan, Westfield, *Secretary.*

1. *An Historical Sketch of the Section of Tuberculosis of the Massachusetts Medical Society.*
   By Dr. John B. Hawes, 2d, Boston.

2. *The Selection of the Operation for the Patient in Pulmonary Tuberculosis.*
   By Dr. Edward D. Churchill, Boston.
   Discussion to be opened by: Dr. Ernest B. Emerson, Rutland, and Dr. Harlan F. Newton, Brookline.

3. *Limitations of the x-ray in the Diagnosis of Pulmonary Tuberculosis.*
   By Homer L. Sampson, Trudeau, New York.
   Discussion to be opened by: Dr. George W. Holmes, Boston.

TUESDAY EVENING, JUNE 9, 7 O'CLOCK

Hotel Statler, Ball Room

THE ANNUAL DINNER

Fellows wishing to sit together at the dinner will please send their names to Dr. H. Quimby Gallupe, Chairman of the Committee of Arrangements, 751 Main Street, Waltham, at the earliest date possible, and proper reservations will be made.

WEDNESDAY MORNING, JUNE 10

8:45 O'CLOCK

Hotel Statler, Ball Room

SECTION OF SURGERY

Officers of the Section

Dr. George A. Moore, Brockton, *Chairman.*
Dr. Francis C. Newton, Boston, *Secretary.*

(The chairman points out the necessity for beginning the meeting promptly so that there may be time to finish by twelve o'clock.)

Symposium on Thoracic Surgery, with Historical Papers in Commemoration of the 150th Anniversary.

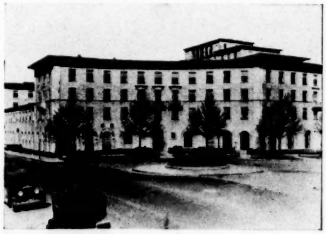
1. *Some Observations on the Use of the Roentgen Ray in the Diagnosis of Surgical Diseases of the Chest.*
   By Dr. George W. Holmes, Boston.

2. *Acute and Traumatic Lesions of the Thorax.*
   By Dr. Horace Binney, Boston.

3. *The Work of the Section of Surgery of the Massachusetts Medical Society, and the Men Who Did it. (Illustrated.)*
   By Fred B. Lund, Boston.

4. *The Paget Tradition.*
   By Professor George Grey Turner, Newcastle-upon-Tyne, England.

PROFESSOR GEORGE GREY TURNER, M.S., who will be the guest of the Massachusetts Medical



VANDERBILT HALL.

Society next June and at the meeting of the Boston Surgical Society, Inc., on the evening of June 10 will receive the Bigelow Medal, has been for many years one of the leading surgeons of the British Isles. He is Honorary Surgeon to the Royal Infirmary, Newcastle-upon-Tyne, and Professor of Surgery in the University of Durham.

He has done extensive and excellent work in the surgery of malignant disease of the stomach and large intestine. He has been a frequent visitor to this country, served in the British forces during the war, and the course of his

duties took him to the Dardanelles and to Syria. In 1928 he delivered the Hunterian Lecture at the Royal College of Surgeons of England on "The Treatment of Congenital Defects of the Bladder and Urethra by Implantation of the Ureters into the Bowel: with a Record of 17 Personal Cases."

In 1930 at the meeting of the American College of Surgeons in Philadelphia he delivered the Murphy Oration on the Surgery of Malignant Disease. He has made contributions in other fields and the Society considers itself fortunate in having so distinguished a member of

BOSTON DISPENSARY.

the British profession attend and speak at its 150th anniversary.

In addition to his address on the Paget Tradition, Professor Turner will speak at the Annual Dinner.

Reference to his oration upon the receipt of the Bigelow Medal appears in the Boston Surgical Society notice on page 1024.

5. *The Surgical Treatment of Certain Chronic Lesions of the Lungs and Pleura.*

   By Dr. Wyman Whittemore, Boston.

6. *Résumé of the Surgical Treatment of Thoracic Lesions, Including Diaphragmatic Hernia.*

   By Dr. Stuart W. Harrington, Rochester, Minn.

   Discussion to be opened by: Dr. A. D. Rood, Springfield; Dr. Ernest L. Hunt, Worcester; Dr. John Homans, Boston; Dr. H. F. Newton, Brookline; and Dr. E. D. Churchill, Boston.

WEDNESDAY MORNING, JUNE 10,
8:45 O'CLOCK

Hotel Statler, Georgian Room

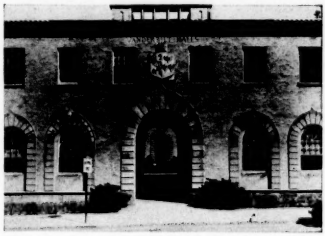
SECTION OF PEDIATRICS

Officers of the Section

Dr. Fred H. Allen, Holyoke, Chairman.
Dr. Joseph Garland, Boston, Secretary.

1. *The History of Pediatrics in Massachusetts.*

   By Dr. John Lovett Morse, Newton.



ENTRANCE—VANDERBILT HALL.

2. *Urinary Infection in Children.*

   By Dr. Richard M. Smith, Boston.

3. *Upper Respiratory Tract Infections in Children with Special Reference to their Sequelae.*

   By Dr. Warren R. Sisson, Boston.

   Discussion to be opened by: Dr. Gordon Berry, Worcester, and Dr. Henry E. Utter, Providence, R. I.

WEDNESDAY NOON, JUNE 10

Hotel Statler, Ball Room

ANNUAL MEETING OF THE MASSACHUSETTS MEDICAL SOCIETY

Business of the Annual Meeting

12:30 NOON

THE ANNUAL DISCOURSE

By Dr. Harvey Cushing, Moseley Professor of Surgery, Harvard University.

DR. HARVEY CUSHING, the orator of our Sesquicentennial Anniversary needs no introduction to this or to any other medical gathering of the civilized world. A native of Cleveland, graduate of Yale College, of the Harvard Medical School, of the Massachusetts General Hospital, late Associate Professor of Surgery at

Johns Hopkins, he is Moseley Professor of Surgery at Harvard and Surgeon-in-Chief of the Peter Bent Brigham Hospital. An Honorary Fellow of the Royal College of Surgeons of London, of Ireland and of Edinburgh, he holds honorary degrees from nine institutions of learning—foreign and American,—has been decorated by Great Britain and France for war service, and filled lectureships too numerous to chronicle. He has been the master-builder in the extension of surgical therapeusis to a new domain—the central nervous system, and in so doing has made invaluable contributions to our knowledge of the normal and pathological physiology of the brain and its hypophysis. Best of all, the beneficence of his work is not confined to his own clinic, for he has created a school of neurosurgery the disciples of which are scattered far and wide preaching—or better practising—its gospel.

But Dr. Cushing is more than this, he is a bibliophile, a medical historian and a man of letters whose pen is as trenchant as his scalpel, —or more appropriately—as the electro-thermic loop with which he cleaves the brain. At our Centennial celebration fifty years ago our Society was favored by the presence of the incomparable Holmes, and now at our Sesquicentennial we shall listen to a speaker whom posterity may adjudge to be no less distinguished.

The meeting will end with luncheon, served in the Ball Room at the conclusion of the annual discourse at 1:30 P. M.

MEETINGS OF THE COUNCIL

The Annual Meeting, Tuesday, June 9, 1931, at 12 noon, in the Georgian Room, Hotel Statler. Other stated meetings in John Ware Hall, Boston Medical Library, at noon, on the first Wednesdays of October and February.

CENSORS' MEETINGS

The Censors for the several districts will meet for the examination of applicants for fellowship on the first Thursdays of May and November.

The Censors for the Suffolk District will examine applicants residing in that district and also applicants who are non-residents of Massachusetts.

Applicants for fellowship should apply to the Secretary of the District Society of the district in which they reside (have a legal residence) at least one week before the date of a given examination, taking with them their diplomas.

TREASURER'S NOTICE

Assessments should be paid to District Treasurers, or, in the case of Non-Residents, to the Treasurer of the Society.

Assessments were due January 1st. For the convenience of Fellows who have been unable to pay, assessments will be received for the Treasurer at the Registration Desk on the mezzanine floor of the hotel.

1930—1931

OFFICERS OF THE SOCIETY

Robert B. Greenough, *President*—8 Marlborough Street, Boston.

Thomas H. McCarthy, *Vice-President*—142 Main Street, Brockton.

Walter L. Burrage, *Secretary*—182 Walnut Street, Brookline.

Arthur K. Stone, *Treasurer*—Auburn Street, Framingham Center.

H. Quimby Gallupe, *Chairman Committee of Arrangements*—751 Main Street, Waltham.

SECRETARY'S NOTICE

All communications as to membership, especially changes of residence and address, should be sent to the Secretary, who keeps a constantly corrected official list of the Fellows and their addresses.

Fellows are requested to see that their names are entered correctly in the Annual Directory.

THE JOURNAL

The *New England Journal of Medicine*, the official weekly organ of the Society, will be sent only to Fellows who have paid their assessments, and to such Honorary and Retired Fellows as may apply for it. Address communications to the Managing Editor of the *Journal*, Dr. W. P. Bowers, 165 Newbury Street, Boston.

AN INVITATION BY THE BOSTON SURGICAL SOCIETY, INC.

The Boston Surgical Society, Inc., cordially invites the members of the Massachusetts Medical Society to attend a special meeting to be held on Wednesday evening, June 10, at 8 o'clock in the Georgian Room at the Hotel Statler. On this occasion the Boston Surgical Society will award, to Professor George Grey Turner of Newcastle-upon-Tyne, England, the Henry Jacob Bigelow Medal and Professor Turner will deliver an oration on "Some Experiences in the Surgery of the Oesophagus."

RICHARD H. MILLER, *Secretary.*

F. B. LUND, *President.*

NEW ENGLAND SURGICAL SOCIETY

THE OPERATIVE TREATMENT OF PHLEGMASIA ALBA DOLENS*

A Preliminary Report

BY JOHN HOMANS, M.D.†

THE state of phlegmasia alba dolens, the painful white swelling associated with thrombophlebitis of the legs, is decidedly mysterious. It is a cause of much suffering and disability and is notoriously difficult to treat. What makes the blood clot in the veins? Where does the process begin and what is the future of the thrombosed vein? Why is the limb white and choked with lymph? What outlets, for the lymph, if any, are plugged; and, of course, what stopper can be drawn to permit the fluid to run away? My own interest in this matter has come through a study of those local hardenings and swellings of the legs which so often follow an attack of thrombophlebitis of the "milk-leg" type. These, it has seemed to me, represent local lymph stasis plus infection, the sort of thing which, on a grander scale, causes elephantiasis. Indeed, the local lesions which I have described in earlier publications and which Trout[1] has since noticed and treated may be regarded as peculiar forms of that interesting state. Naturally, I have been driven to study thrombophlebitis itself, to see if there cannot be found here some basic change, the cure of which will do away with subsequent local and general edema of the leg.

In pre-Pasteurian days, the common thromboses of the puerperal state chiefly were studied. At the beginning of the 19th century, it was thought that inflammation of the vein's wall caused clotting of the blood within it. Cruveilhier[2] held that, following delivery, and detachment of the placenta, the great uterine sinuses became subject to a local thrombus-forming phlebitis, of a beneficent sort. But it might spread, from causes which he could not explain, to the uterine veins, into the hypogastries and thence, perhaps, upward or downward, toward the vena cava in one direction; into the femoral veins in the other. Under Virchow's[3] influence, the idea of a primary phlebitis was dropped. The blood was the chief consideration, and changes in the venous walls were secondary. Then bacteriology came in. If any of you are interested, you will find the story told by William H. Welch[4] in his Chapter on Thrombosis in Allbutt's System of Medicine. In typical instances of milk leg, Widal[5] and others found streptococci in the walls of thrombosed uterine veins, and since Pasteur[6] had just laid uterine sepsis to the door of these bacteria, it was easy to understand this form of phlegmasia. Its primary cause was a phlebitis of bacterial origin. Its source was in the pelvis, in the uterus itself. Yet this hardly explained the thromboses of many fevers, of cachectic states, of postoperative convalescence. These thrombi were called "marantic". In most of them, there was no uterine sepsis, nor anything in males corresponding to it.

Indeed, there is no adequate explanation today for much of the thrombophlebitis in the great vessels draining the limbs. Weigert's[7] ingenious stains showed him bacteria in and about many a thrombus which would otherwise have seemed bland. Others have found microbes in the thromboses of typhoid fever. On the whole, such evidence as there is points to a change in the walls of veins, and particularly to the presence of bacteria, as the usual cause of phlegmasia alba dolens. And since the thrombophlebitis of long-continued fever, of cachexia, and of postoperative states is clinically identical with that following child-birth, it would appear that the primary lesion is in the great pelvic veins draining the leg.

Typically, phlegmasia alba dolens is preceded, for some part of 48 hours, by a rise of pulse and temperature, followed by a severe cramp-like pain, referred to the groin, the thigh, the back of the knee or even the calf, and the swelling, which then sets in, includes the entire leg, from the inguinal ligament to the toes. Depending on the violence of the process, the initial and subsequent fever is higher or lower and the swelling of the entire leg is more or less tense. This swelling has the quality of pitting very little on pressure, by which it differs from the edema of cardiac origin, an edema resulting from a general circulatory weakness. To this brief description it is almost unnecessary to add that, in the mildest cases, the swelling lasts only for 10 days or so and leaves little damage behind it, but that the severest ones drag on for months, leaving a leg, or legs, permanently enlarged and subject to local or general elephantiasis and ulceration. In the whole process, it is edema rather than venous engorgement which chiefly attracts attention, and, for a moment, your attention ought to be directed to the relation of the veins to *lymphatic* obstruction, and to the difference between venous and lymphatic stasis.

*From the Surgical Clinic of the Peter Bent Brigham Hospital.

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†Homans—Surgeon to the Peter Bent Brigham Hospital. For record and address of author see "This Week's Issue", page 1062.

In 1913, Matas[8] called attention to elephantiasis as a state which might follow any sort of venous or lymphatic obstruction—thrombophlebitis in particular. He showed that there was nothing specifically tropical about it, but that it was almost certain to occur whenever repeated infections attacked a limb already subject to lymph stasis. Then the superficial tissues became fibrosed, the skin enormously hypertrophied. However, Matas did not explain how phlebitis actually caused obstruction of the lymph-stream. Light was subsequently thrown upon this matter by the experiments of Halsted*[9] and Reichert[10]. If the thigh of an animal were divided down to the bone, leaving only the *bare artery and vein*, and at once united with great care, swelling of the limb would appear on the second day, begin to diminish on the fourth and be gone by the tenth. With this swelling, the veins had little to do. It was evidently a matter of interruption of the lymphatics themselves. Late division of the femoral vein, when the edema had nearly disappeared (owing to the rapid regeneration of lymph vessels through the scar) would hardly prolong it, but occlusion of the regenerated lymphatics, by the injection of foreign particles, would cause it to recur. It was discovered, that to interrupt every last lymph vessel, the principal artery and vein must be isolated with great care. Practically, their outer coats must be stripped, since important lymphatics might run even in their walls. Reichert has recently reiterated and amplified these findings. Their point is that lymph stasis can occur when the vein which drains a limb is open and can disappear while the vein is obstructed. Venous stasis has little or nothing to do with the sort of edema under consideration here.

How then, does thrombophlebitis cause lymph stasis? Mere ligation of veins, and thrombosis of a mechanical sort within them, rarely causes any swelling whatever. You may divide an animal's femoral and iliac vessels in as many places as you please, and you may tie the femoral vein in man, without causing any swelling whatever, but, if you can succeed in setting up a considerable inflammatory reaction in and about these veins, there will result a quite typical edema, similar to that pictured by Reichert after union of the divided dog's leg. In previous communications,[11,12], I have described experiments of this sort, experiments which result in a greatly swollen leg, quite like the milk leg of human beings, though no *permanent* lymph stasis ever follows, and in his recent paper, Reichert[13] reports similar experiences. *Evidently there is a very close association of the larger lymph vessels with the principal veins and arteries of a limb.*

The following quotations from the descriptions of William Cruickshank[14] (a pupil of William Hunter), and the accompanying sketch, made from his original drawing, give a good idea of the relations between the lymphatics and blood vessels: "The large absorbents of the lower extremity are formed into two sets, superficial, and deep-seated; the superficial set accompany chiefly the cutaneous veins, and the deep-seated accompany the arteries. The cutaneous veins of the lower extremity form two principal

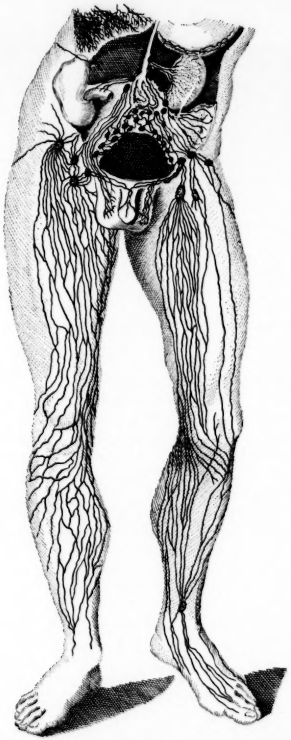

FIGURE 1. A reproduction of the lower half of Cruickshank's drawing, showing the superficial lymphatics of the legs and their connections with the iliac vessels.

trunks; one of these is named saphena major, and the other saphena minor. The greater number of the cutaneous absorbents accompany the saphena major." Cruickshank followed the absorbents, as he called them, by injections of air and of mercury. In regard to the deep lymphatics, he says: "From the glands in the ham" (popliteal: J. H.) "two grand trunks . . . run on either side of the femoral artery. These frequently communicate with one another by cross canals and their branches sometimes form circles

*In these experiments, Drs. Mont R. Reid and F. L. Reichert took a major part.

which completely surround the artery. In one case they both terminated in the same gland in which the greater number of the cutaneous absorbents had terminated; but more frequently they terminate in three or four large glands, which lie on the upper or under side of the inguinal artery. . . . From these glands several trunks emerge. I have occasionally seen two; sometimes four; and, the very last time I injected them, there were six." Then he goes on to describe the further course of the lymphatics as the "plexus iliacus externus". From this, a single vessel might enter the thoracic duct or drain into the lumbar glands.

This story is supported by Sabin's[15] account of the development of the lymphatics in the embryo. They bud from veins, and their main trunks, having gathered radicles from the various lymphatic networks of the tissues, accompany the various superficial and deep veins, and finally, at the root of both the upper and lower limbs, all, without exception, lie grouped in and about the great arteriovenous sheath. Thus, *from the saphenous opening upward*, anything which plugs these channels causes swelling of the *entire* leg, and no process at any lower point can cause anything like so complete a stasis. It may then be regarded as axiomatic that the thrombophlebi-

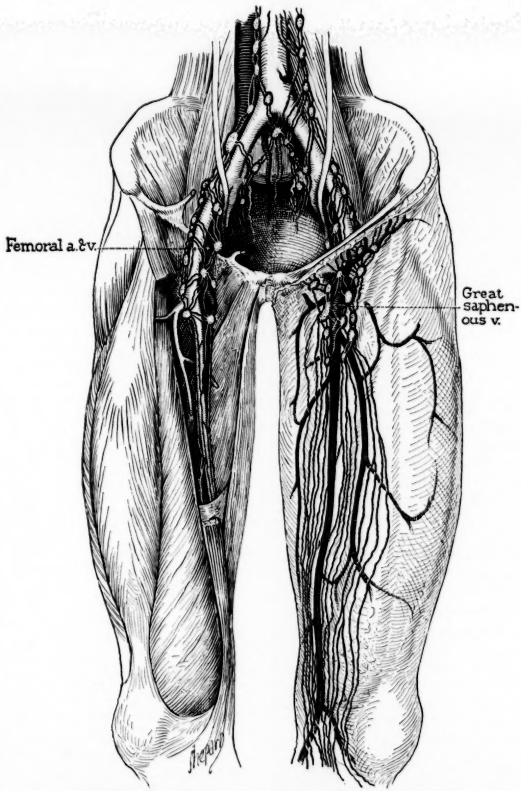

FIGURE 2. A composite drawing to show the principal lymph vessels draining the legs. On the right, are sketched the deep lymphatics which accompany the femoral artery and vein (modified from Bartels[16].) On the left, are sketched the superficial lymphatics, especially those associated with the great saphenous vein (modified from Bartels and from Cruickshank). The lymph nodes and vessels at the groin and within the pelvis are shown as in a sketch of H. F. Aitken from Dr. John Warren's dissection.

tis of phlegmasia alba dolens must be present in the pelvis in all cases. How far it extends down the leg is probably a variable matter. The key to the situation for one leg is clearly the arteriovenous sheath from the saphenous opening to the vena cava.

If these concluding statements are true, it ought to be possible to influence the course of phlegmasia alba dolens by releasing the lymph channels from the inflammatory pressure in which they are held, that is, in and about the sheath of the great vessels from the region of the common iliac vein down to the opening of the great saphenous into the femoral, and perhaps even lower in the thigh. Such is actually the case. In two patients, I have succeeded, by splitting open the iliac and femoral vascular sheath, in causing a very striking change in the swelling of the limb, that is, in favorably affecting the flow of lymph from the leg.

Before describing these cases, it will be well to say another word about the course of a typical thrombophlebitis and of the evidence bearing upon the extent of the thrombosis. In the first stages of the disease, the surface of the leg is apt to be very slightly flushed, with perhaps a cyanotic tinge. This is only evident on careful examination, and at first sight there is little sign of venous engorgement. However, it may be noticed that the small superficial veins in the region of the groin, where anastomoses occur between the vessels of the thigh and the abdominal wall, are more evident than usual. And sometimes the anastomotic veins about the knee are visible—proof, to my mind, that the thrombosis has extended at least down to the level of the popliteal space. Now, depending upon the severity of the phlebitis, that is, the violence of the reaction in the vein and upon the correspondingly prolonged obstruction, the compensatory anastomotic vessels will or will not develop into permanently enlarged channels. Should they soon cease to be visible, it must be supposed that the clot in the main channel is rapidly being canalized, or in favorable cases, softened and absorbed, leaving the original vein patent. It should be realized, however, that any notable sign of venous obstruction is unusual. The eye is not impressed by this aspect of the situation, but rather by the white swelling which has given the disease its name.

The edema of thrombophlebitis is evenly distributed over the entire leg, and though it includes the lower buttock, it ends sharply at the inguinal ligament. The surface is tense, owing to the engorgement of the *superficial* lymphatic plexuses, a state which permits, in the more complete obstructions, little pitting on pressure. This complete stasis, equally well marked in the thigh as in the lower leg, is sufficient evidence that the thrombosis occupies the external iliac vein, perhaps the common iliac, and suggests that it *may* extend to, but not beyond, the point where the common iliacs join, that is, the vena cava. A left-sided phlegmasia is the rule (for imagined anatomical reasons which seem to me insufficient). If both legs are involved, it must be supposed, either that the phlebitis is bilateral, or that the process has actually reached the vena cava. In visualizing the extent of a thrombosing process in the veins, it should be borne in mind that it pushes on, both with and against the current, to the nearest branch which carries a vigorous stream. It occupies all stagnant areas. Thus, thrombosis, beginning in the uterine vein, must often progress into the internal iliac (hypogastric). Very likely it is usually confined to this vessel, but if it passes the junction of the internal and external iliacs, there is nothing to prevent it from extending, in one direction, as far as the vena cava, and in the other, down the femoral. In thrombophlebitis of males and in non-puerperal cases among females, there is no knowing where the process originates, but presumably in the common or external iliac vein, since, as I explained earlier, such cases appear similar to the phlegmasia alba dolens of postpartum states. I dwell particularly upon these points because it seems clear that, if my idea is correct, namely, that the main lymph channels can be released from a perivascular inflammatory grip by operative means, the full extent of the phlebitis must be uncovered. Those of you who happen to have exposed the iliac and femoral vessels, under normal conditions, will have noticed the fibrous sheath in which artery and vein are confined and the rather close attachment of the two vessels to each other. Evidently, any septic process in either artery or vein must involve all structures in and about the envelope which contains them both.

One more matter before taking up the operative procedure. The natural course of severe phlegmasia alba dolens is often very long. Fever remains nearly stationary at a level of perhaps 100°-102°, and for four to six weeks, or even longer, the leg remains tensely swollen, even when elevated. Following the subsidence of the initial pain, the patient experiences merely a feeling of heaviness and discomfort. Finally, fever comes down, the leg begins to soften, and slowly the patient begins to get about—but a considerable amount of edema remains as an annoyance for life. Evidently, then, after a time, as the reaction about the vein dies down, some improvement in the circulation of the lymph occurs, but though, in favorable cases, it is restored nearly to normal, in the severer ones, it remains permanently crippled. It seemed well, therefore, to select for treatment the worst sort of case, one which could hardly be expected to be restored to a normal state in the ordinary course of events.

Such a patient presented himself, at the P. B. Brigham Hospital, on April 20, 1930, in the person

of P. C. V., Surg. No. 36286, a negro of 29 years of age, whose illness took the following course: Three weeks before entry, he was stricken with a rather atypical pneumonia (lobar?). Three days before entry, his left leg became stiff and painful, from toes to groin. Swelling came on rapidly. Fever recurred. (Judging from the Roentgenograms and the physical signs, the pneumonia may actually have been an infarct—in which case the phlebitis could conceivably have been the initial lesion.) During the eight days which elapsed before operation, his average temperature was about 100.5 and quite

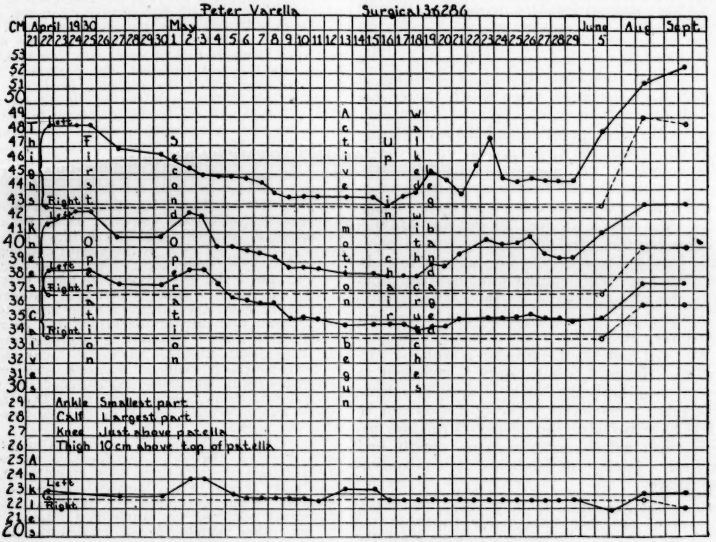

FIGURE 3. A chart to show the course of the lymphedema in the case of P. C. V., before and after operative decompression of the perivascular lymphatics, in the treatment of Phlegmasia Alba Dolens. (Unfortunately the right (control) leg was not measured frequently. Its enlargement, after the patient had been up and about for some weeks, probably represents recovery from the atrophy of disuse. A good deal of the enlargement of the left leg is due to the same cause.) Thighs are measured 10 cm. above the patella; the knees, at the upper border of the patella; the calves, at their largest points; the ankles, at their smallest points.

well sustained. His left leg was everywhere tense, evenly enlarged and hardly pitted on pressure. Its size did not vary from day to day.

The first operation, under spinal anesthesia, was begun by opening the lower abdomen just to the left of the mid-line. On exposing the left pelvic brim, it was impossible to determine by palpation the state of the vein. There was, however, a very evident brawny edema over the vessels and I could barely detect the pulsation of the external iliac artery, possibly the point at which the internal iliac was given off. This last was an important matter, for if I were to expose the external iliac vein up to the region of the common iliac, I might wound the internal iliac artery where the vein passes behind the artery. I began by dividing the peritoneum and cutting down through obviously inflamed, vascular, lymph-soaked tissues. The ureter was pushed mesially. The artery was not hard to find by palpation, but the vein was so little like its normal self that I only discovered it by tearing from it a small thrombosed branch, just above the inguinal ligament. And both branch and vein were solidly filled with a dry, dark clot. It was then possible to open the arteriovenous sheath up to the point at which I could now feel the internal iliac artery and, along the mesial side of the vein, well down the femoral canal. But now so much time had gone by that the spinal anesthesia was giving out and a general anesthetic was needed. To have exposed the common iliac vein would have required mobilization of the sigmoid flexure and a difficult dissection in the thickened vascular tissues over the edge of the pelvis. It seemed best to draw together the peritoneal edges, close the abdomen and await events.

The result of the operation was quite striking. On the second day, the patient stated that the leg felt very much more comfortable, and, as the chart of measurements shows, the swelling began almost at once to subside. Even the day after operation, the tenseness of the leg was slightly diminished.

It seemed, therefore, as if the operation had perhaps been carried high enough, but I was not at all satisfied that something more might not be accomplished by decompressing the femoral sheath as well. Accordingly, a week after the abdominal operation, an incision was made in the upper thigh, just mesial to the position of the great saphenous vein, which, as it is accompanied by many lymph vessels (yet evidently was not thrombosed, or at least not sufficiently inflamed to be palpable), I did not wish to disturb. By incising the fascia lata and tracing the femoral artery by palpation, it was possible to open the vascular sheath. Again, this

was edematous and much thickened, but as the dissection was carried down into the upper part of Hunter's canal, the vein appeared less and less distended with clot, its walls began to show a normal bluish color and the local edema decidedly lessened. Evidently the phlebitis and periphlebitis diminished in intensity from above downward. I am inclined to believe that further dissection would have shown a normal vein in the lower part of the canal. You may think I was unenterprising not to have made a more complete dissection, both above and below, but porky tissues are not easy to work in, and you will readily see that it was essential to do the least possible operative damage.

It is of a good deal of interest, that, as the chart shows, the second operation caused for a few days, an increased amount of swelling in the region of the knee, after which the edema receded faster than ever. By the fourteenth day after the first operation and the seventh day after the second, the swelling had disappeared, a change which, in view of the patient's preoperative state seemed hardly credible. Unfortunately, this patient is not a very enterprising individual. When allowed to get out of bed, his lower leg was bandaged lightly with a semi-elastic bandage and he was encouraged to walk with crutches. This caused him to fancy himself in the rôle of invalid, so that after leaving the hospital he stood around a good deal but walked very little, the worst possible treatment for his still somewhat crippled lymphatic circulation. However, his bandage is sufficient to prevent swelling below his knee and the edema of his thigh is moderate. The operation can be said to have revealed the predicted relation between vein, artery, arteriovenous sheath and lymphatic vessels, but probably it was incomplete above.

The second case, Mrs. E. M. F., Surg. No. 36452, 46 years of age, had been under treatment for chronic myocarditis, with slight decompensation, for several months. At the time of her entry, May 12, 1930, she had already suffered from trouble with her left leg for four and one-half weeks. The swelling was ushered in by a sharp cramp in the inner side of the left thigh and she had to be helped into bed. The next day both legs were swollen, the left much more than the right. On rest in bed, the right leg soon returned to normal, and the left, which had at first been somewhat bluish, soon resumed a more natural color.

After ten days in the hospital, that is, five and one-half weeks from the onset of the phlebitis, the left leg was still slightly but definitely cyanotic and was uniformly swollen, but under such moderate tension that it distinctly pitted on pressure.

The operative procedures were the same as in the first case but the findings were not quite the same. The external iliac vein was solidly thrombosed. However, its walls appeared nearly normal, and actually there was much more edema and induration of the vascular sheath and about the artery than immediately about the vein itself. This is rather interesting in view of Cruickshank's account, which I have quoted above, and makes it seem as if there must have been present an actual lymphangitis, quite as violent about the artery as about the thrombosed vein. It is also of interest because of another observation which I have recently made during the performance of a lumbar sympathetic neurectomy upon a patient suffering from threatened gangrene of the left foot. Twenty years before, she had been attacked by phlegmasia alba dolens in the course of pelvic peritonitis, and I could detect no pulsation whatever in the left iliac artery, the edge of the pelvis being smooth and solid; from which it is, perhaps, to be inferred (1), that the inflammatory reaction inside the vascular sheath may be severe enough to destroy both artery and vein, and (2), that the initial pain is due to ischemia resulting from arterial spasm. But to return to the case upon the operating table, the reaction seemed less in the region of the left iliac bifurcation, up to which point the sheath was opened, than just above the inguinal ligament, so that no attempt was made to expose the common iliac vessels. The sheath was split along its mesial side down to a point well below the inguinal ligament, the peritoneal edges folded in over it and the abdomen closed.

The result of this operation was decidedly favorable, that is, there was an improvement in the color of the leg and considerably diminished swelling. In view of the induration away from the vein itself, I had expected very little change, and accordingly repeated the decompression of the femoral sheath, which I had carried out in the earlier case. On this occasion, it was almost impossible to discover the actual wall of either the artery or vein! Both were embedded in so much scar tissue that all I could do was to split the front of the sheath and separate the vessels by a combination of blunt and sharp dissection. But I find in my operative notes that "Any attempt to pass a blunt instrument upwards or downwards inside the sheath resulted in the tearing off of small branches of the artery and causing a disagreeable ooze." However, I succeeded in opening the sheath through Hunter's canal, to the popliteal space. I could not tell exactly where the clot ended below, but there was softened clot in the femoral just below Scarpa's triangle. The femoral artery was noticeably small in size as compared with the normal.

The result of this operation was what might have been expected, that is, a considerable *increase* in swelling from the mid-thigh down, for I must have done more injury to the lymphatics than could be balanced by any decompressive effect, and no improvement occurred for nearly two weeks. Then, the leg rather rapidly shrank, and in the end, the patient left the hospital wearing a bandage from toes to knee. Since then she has steadily regained her strength and activity. She feels that she has been greatly improved, but my own feeling is that when an operation is performed as late as this, after the lymphatics have become enclosed in actual scar tissue, a good result is hardly to be expected.

It is, of course, too early to draw conclusions from such observations as these, but they suggest a revision of the present conception of thrombophlebitis and the lymph stasis which goes with it. Hence the following inferences:

First, judging by the nature of the clot, as seen at operation in two instances of serious types of phlegmasia alba dolens, sepsis within the vein itself is little in evidence;

Secondly, and fitting in with the above, the experiments by Zollinger and me, and those of Reichert, which show that a gross inflammatory reaction must take place in the wall of the iliac and femoral veins before thrombosis within them can cause lymph stasis, point to the tissues *outside* the veins as the seat of lymphatic obstruction in phlegmasia alba dolens;

Thirdly, the very obvious inflammatory reaction about the principal artery, as well as the vein, indicates that in phlegmasia alba dolens there is present a lymphangitis (?) about both vessels quite apart from any disease of the vein's wall;

Fourthly, the character of the pain at the onset of phlegmasia alba dolens is often of so severe and cramp-like a nature as to suggest ischemia of arterial origin as its cause, in which case the reference of pain to the calf and thigh is quite what might be expected from a spasm of the iliac and femoral arteries; and

Fifthly, as a logical consequence of the two preceding propositions, it is possible that a primary deep, perivascular lymphangitis causes both an initial arterial spasm* and a thrombosis of the associated veins; and

Sixthly, whether or not such a hypothesis is correct, it appears that confinement of the principal lymph vessels of a limb within the inflamed arteriovenous sheath is the cause of the lymph stasis of thrombophlebitis, and that incision and decompression of this sheath offer a means of improving the flow of lymph from the swollen limb.

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Discussion

Speaker from the Floor: I would like to ask Dr. Homans what his opinion is regarding the white swelling of the arm which occurs after axillary dissections, whether he thinks that it could be remedied by opening the sheath of the vein.

Dr. Homans: Of course there are many causes of lymphatic obstruction. I have tried to explain the apparent mechanism of some of these. Cancer of the breast represents an obstruction of the lymphatics due to the growth itself or to an inflammatory reaction resulting from the operation or from a postoperative infection. I see no reason why any operation should do anything for it.

As far as milk legs are concerned, I ought to add that I am not seriously advising every patient who is suffering from phlegmasia alba dolens to be operated upon. It seems to me the only indication for using such an operation is a very high degree of swelling and fever, promising permanent disability, and I judge the abdominal part of the operation is the most important part of it. I should have drawn that inference. As I say, this is a preliminary report. I don't really know that I wish it to be taken very seriously. I think perhaps I am more interested in proving the source of the lymph stasis by these means than I am in advising that these operations be performed at the present time.

President Cheever: I should like to ask Dr. Homans whether in the case of a dog with the milk leg, in ligating the vessels the conditions were not mixed a little; that is to say, why didn't you simply produce a perivascular inflammation without ligating in that particular instance? In the dog with the milk leg you ligated the main vein in two places. Therefore, you laid that open to the explanation that any resulting lymphostasis might be due to vessel constrictions.

Dr. Homans: If you had seen the dogs in which we tried to produce the swelling of the leg by ligating the iliac and femoral veins in three or four places, you wouldn't say ligation caused any swelling whatever. If you inject some mild and harmless bacterium into one of these veins after ligation, swelling usually follows, or if you inject ferric chloride you get a terrific reaction and the leg swells up like a balloon. But the ligations alone never do anything. I suppose I must know of ten or a dozen legs in which the veins were ligated in more than two places without any swelling whatever. It is very difficult to produce this swelling without making a rather violent inflammatory reaction.

I think the explanation is that the trunk lymphatics run along the course of the great vessels. Possibly if you wound a piece of gauze around the artery and vein over a considerable distance you would get just as good lymph stasis as you would by injecting something inside the vessel.

President Cheever: Of course we know that the opinion of Dr. Halsted as to the cause of the

*Since reading this paper, I have observed, in a man about 30, an instance of thrombo-phlebitis which seemed to support this hypothesis. The initial pain, referred to the back of the knee, was cramp-like. Swelling was moderate, but the pulse in the common femoral was feebie (as compared with the opposite leg) and I could detect no pulsation beyond this point.

swelling of the arm after operations on the breast was that it was practically invariably due to infection. I personally have felt very doubtful about that in my cases, where I have made it a point to save the lymphatics of the neurovascular bundle itself, and not clean the areolar tissue from the artery and the vein down the arm. I have usually not had that swelling, but in cases where it seemed necessary to denude those vessels and by that means completely to remove the brachial lymphatics, that is what I would expect. I suppose a certain number of those cases were due to the mechanical removal of the lymphatic channels of return.

Dr. Porter, have you any opinion about that point?

DR. CHARLES A. PORTER, Boston: I am convinced by Dr. Homans' arguments. I think he is on the right track. As Dr. Homans has brought out, I think a large part of the axillary vein can be removed without edema unless infection occurs. This, I think, is somewhat analogous to thrombophlebitis of the lower extremities.

DR. A. W. ALLEN, Boston: I would like to ask Dr. Homans if he contemplates applying this new procedure to cases of elephantiasis as well?

DR. HOMANS: I have an idea that I have already answered this question for myself. I thought at first this might prove to be a method which would be of great value in treating elephantiasis. The point of obstruction is really inside the pelvis, and thus no peripheral operation for elephantiasis of the whole leg is of any consequence whatever (i.e., from the point of view of drainage). It may perhaps be true, however, that something may be done by dividing the arteriovenous sheath, as I have done in these cases. This was my feeling, but having operated upon this woman, the last case, five weeks after the initial phlebitis, and having seen how dense the scar was, I judged that after all an operation done very late in the day when the lymph stasis was old and the inflammatory reaction within the sheath was old, the operation would probably have very little good effect.

The only good an operation of that kind is likely to have, it seems to me, lies perhaps in transplanting a whole vein, turning up a vein into the abdominal wall for instance. Supposing you took a large branch of the great saphenous and turned up that branch into the abdominal wall with all the surrounding fat, you might succeed in transplanting the lymphatics in that way, so that they would make contacts with other lymphatics, of the abdominal wall, for instance. I think it is more along that idea that I would expect to benefit elephantiasis than from the decompression of the sheath itself.

THE MECHANISM OF THE DEVELOPMENT OF COLLATERAL CIRCULATION*

BY DANIEL A. MULVIHILL, M.D.,† AND SAMUEL C. HARVEY, M.D.†

THAT the ligation of a great vessel does not customarily impair the integrity of the circulation of a limb has been apparent since the time of Antyllus who performed resections of aneurysms of the extremities. The anatomical readjustment, by the development of a collateral circulation, while previously observed by Morgagni, was experimentally studied by John Hunter in the ligation of the main vessel to the rapidly growing antler of the deer, the result being not the cessation of growth but the rapid appearance of many enlarged vessels which carried the blood around the obstruction. The application of the knowledge so derived to the ligation in continuity of the femoral artery for aneurysm of the popliteal artery by John Hunter made this phenomenon a matter of current knowledge and led in the first place to careful descriptions of the anastomotic vessels which might serve for the development of collateral circulation in all parts of the body, in the second place to much speculation as regards the mechanism involved,—speculation which has as yet led to no certain answer.

Surgical interest in the development of the collateral circulation has in recent years been revived, for its importance in other situations than those where the circulation has been arrested by a ligature is becoming apparent. Gangrene, the ultimate expression of an inadequate circulation and the disabling deficiencies which fall short of this, occur in a group of vascular diseases which vary all the way from the angiospasm of Raynaud's disease to the purely mechanical obstruction of arteriosclerosis. That the impending disaster is in many instances avoided or postponed by the development of a collateral circulation has been repeatedly demonstrated and various attempts have been made to increase or expedite this compensatory process[1]. Such measures have been purely empirical for the exact mechanism has been unknown.

John Hunter's terse but teleologic explanation that "the blood goes where it is needed" still remains as good a statement as any of the ultimate cause of the development of a collateral circulation. As to how it manages to do this, many hypotheses have been proposed. (For the

*From the Department of Surgery, Yale University School of Medicine, New Haven, Connecticut.
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†Mulvihill—Assistant to Professor Emil Goetsch, Long Island Medical College. Harvey—Surgeon-in-Chief, New Haven Hospital and New Haven Dispensary. For records and addresses of authors see "This Week's Issue", page 1062.

literature see Bier[2], Hess[3] and Kolesnikow[4].)

That the lowered blood pressure in the vessels from which the circulation has been shut off leads to an increased flow from the collateral vessels in which the pressure is normal and this in turn to a compensatory enlargement of the latter has been a common statement[5, 6]. On this basis Kümmell[7] suggested that the nearer the ligated vessel to the heart, the easier for the collateral circulation to develop because of the increased pressure. That such an increased flow occurs without a primary change in the calibre of the communicating vessels is improbable. Moreover the mechanism by which a more rapid flow of blood through a vessel causes it to enlarge is not given, and without this the explanation remains as elementary as that of John Hunter.

Another form of this hypothesis received for a time considerable credence. This was that the shutting off a part of the circulatory bed raised the pressure in the remainder sufficient to cause an increased flow through the collateral vessels[8]. That an increase sufficient for this action does not occur was appreciated by Bier[2] and this idea has now been long discredited.

The idea of a reflex action causing dilatation of the blood vessels in the anemic area was proposed by Stefani[9] in 1887. In the salamander, frog and pigeon, simultaneous division of the neurologic communication with the central nervous system and ligation of major vessels led to gangrene, and he concluded that a central reflex was essential to the development of a collateral circulation. These experiments were repeated and not confirmed by Bier[2]. Stefani apparently, however, was the first to seriously propose and to attempt to demonstrate experimentally a reflex component in the mechanism and therefore is worthy of note.

The idea persisted, however, that a vasodilatation centrally controlled was an essential component in the mechanism. Following the demonstration of the stimulatory effect of carbonic acid upon the respiratory center it was proposed that the anemia in the area deprived of blood led to an increase in this acid and the resulting reaction overflowed into a general vasodilatation which opened up the collateral vessels[10]. With the better understanding of the acid-base regulation, this hypothesis has fallen into the discard.

Both Bier[2] and Hess[3], who have reviewed this subject more extensively than others, arrived at essentially the same conclusions. They discarded the idea of a central reflex, the former because of experiments which showed the collateral circulation developing in spite of the division of all central neurologic pathways, the latter on the basis of the absence of any proved afferent pathway for a vasomotor reflex of the affected part. Both thought the phenomenon related to the relative hyperemia which follows a temporary suppression of the circulation by bandaging a limb or the performing of work by the muscles of the part in question.

Such a localized vasodilatation occurring in the vessels blocked by an embolus was observed by Cohnheim[11] in his classic experiments on embolism. Not, however, until the renewed interest of recent years in the anatomy and physiology of the smaller vessels has this hypothesis been very seriously considered. Kolesnikow[4] in experiments on dogs demonstrated that the collateral circulation of a limb in which the adventitia of the vessel had been injected with alcohol, the vessels having been blocked with a paraffin embolus, was distinctly more ample than that in the control limb which had not been thus "denervated". He concluded from this that the action of the nervous system was an important component in the development of a collateral circulation.

Such studies as these and those of Reichert[12] have been concerned primarily with the end result and the time consumed in the development of the collateral circulation has not been determined. From a careful search of the literature one gains the impression that this increased function on the part of the collateral vessels is a matter of slow progression over hours and this concept may account for the general acceptance of the mechanical theory of its development. The emphasis has been laid on the return of pulsation in the larger vessels which is indeed a matter of some time and the significance of the return to approximately normal temperature which is much earlier has been overlooked. Halsted[13] is almost the only exception to this in that he watched, with his customary meticulous observation, following excision of the subclavian artery a sharp rise of the temperature in the limb concerned, some 4 hours after the operation. He attributed this to vasodilatation incidental to the ligation and division of the subclavian and axillary arteries.

Inasmuch as this time element had not been accurately determined, it occurred to one of us that a quantitative study of this might be of value and experiments were performed of which a preliminary report was made by Harvey and Ferris in 1927[14]. In these experiments the temperature of the deeper structures in the foot-pad was taken to be a function of the blood flow through it. This was measured by means of a thermocouple and a galvanometer, the deflection of which was calibrated in terms of temperature change. The vessels were obstructed by ligations which was performed in most instances immediately above the origin of the profunda femoris. In several striking experiments the temperature of the affected limb fell to that of the room and after remaining so from 8 to 15 hours, in the course of from fifteen minutes to an hour rapidly returned to that of the control limb. It was thought that the sharpness of the return indicated a vasomotor reaction rather than a me-

chanical readjustment. However, these results were not obtained with sufficient consistency to enable one to draw any certain generalizations. Since then further experimentation has been done which will be reported in detail elsewhere[15].

From these latter experiments it has been determined that in the dog, by ligation of the vessel corresponding to the external iliac in man, a drop in the temperature of the corresponding limb to that of the room can be consistently obtained. Also that if the animal is followed carefully with frequent determinations of the temperature in this limb, it will equally consistently return after a few or several hours rather abruptly to the temperature of the control limb. The rate of this return suggests that there is an important vasomotor component concerned in the establishment of the collateral circulation.

Whether or not this be the case, three possibilities during the phase of cooling seem apparent, the one that the vessels concerned in the establishment of the collateral circulation retain a normal range of vascular tone, a second that these vessels are dilated and a third that they are constricted. What the effect of the ligation of a large arterial trunk may be upon the tone of its branches aside from the reduction of blood pressure within them is not known and is obviously difficult to determine. Even more so is that of the channels which are to become the collateral circulation.

It is, of course, well established both in man[16] and in the experimental animal[17, 18] that removal of the sympathetic ganglia which are tributary to an extremity produces a vasodilatation and an increased blood flow through it. If then, following ligation, the vessels concerned in the development of the collateral circulation remain of normal size or are constricted, removal of the tributary sympathetic ganglia might lead to a reëstablishment of the circulation.

This was done in dogs, the same experiment as given above being performed, but with the addition of a lumbar ganglionectomy. When this was carried out synchonously with the ligation there was no fall of temperature in the leg concerned, and when performed after such a fall had been established the temperature promptly returned to that of the control limb.

It is apparent then that in the presence of a deficient circulation due to the ligation of one of the great arterial trunks, the vessels which are concerned in the collateral circulation remain during the deficient phase to a greater or less degree constricted. It is probable, though this is not necessarily the case, that the initial move in the reëstablishment of the circulation is the loss of this constriction and dilatation of the vessels. At least the interruption of efferent vasomotor impulses by ganglionectomy initiates the establishment of the collateral circulation and to all appearances in the same manner as it occurs after a time of itself.

Whatever the theoretical deductions may be, the application in the clinic is apparent. In every circulatory deficiency there is the possibility of a vasoconstrictor component, the intensity of which it is necessary to determine as has been done in the more chronic situations by several investigators and by various means. That the same is true in the acute deficiencies has not been so well appreciated. The results of our investigations suggest that in an abrupt interruption of the circulation, the development of the collateral circulation may be accelerated by interruption of the vasomotor reflex and very probably in certain instances gangrene avoided.

SUMMARY

The development of a collateral circulation following the abrupt interruption of the blood flow in a large vessel, after a period of delay, occurs rapidly. This suggests the presence of a vasomotor component. A similar reëstablishment of the circulation can be induced by an interruption of the vasomotor reflexes to the extremity in question. This may be of value in instances of impending gangrene from the sudden interruption of the blood flow in an arterial trunk.

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TREATMENT OF POSTOPERATIVE VENTRAL HERNIA*

BY JAMES J. HEPBURN, M.D.†

THE frequency and seriousness of postoperative ventral hernia, and the suffering which its victims undergo, makes it one of our major surgical problems. During the period 1923 to 1927, inclusive, there were 304 cases of this condition operated upon at the Boston City Hospital. This is not a large number in proportion to the total number of abdominal operations, to be sure, but it is large enough to indicate that the incidence is by no means small. These patients are usually discouraged, neglected, and in rather desperate state. Memories of past operations still in their minds frequently make them put off further operation until the last possible minute. Often they have sought professional advice and have been further discouraged by being advised against another operation. As a result of this, these herniae are often huge, often incarcerated and not reducible. The abdominal walls are usually weak, relaxed and, in other words, poor material for reconstruction.

ETIOLOGY

There are many factors that enter into the etiology of this condition. Among them are long-continued drainage; wound infection; inherent diminished tissue vitality as a result of age, wasting disease such as carcinoma, nephritis, diabetes, anemia, etc.; careless division of nerves; improper and careless closure of the wounds, often in the attempt to establish a new speed record; postanesthetic straining and retching; chronic pulmonary disease, such as bronchitis, asthma, and postoperative pulmonary complications.

TREATMENT

In considering any method of handling these cases, we must remember that most of these patients have relaxed, stretched, thinned abdominal walls; that part of the abdominal viscera lies outside of the abdomen; that any operation must result in diminution of the size of the abdominal cavity; that we propose to replace viscera which have lain outside of the abdominal cavity into a space which we intend to diminish and into a space which is already crowded.

Obviously, the first thing to do is to reduce the bulk of the abdominal contents by a strict reduction diet and a proper regulation of the bowels. Fortunately, in reducing a person's weight, the omental fat is the first to be absorbed, so that we may expect a reasonably rapid diminution in the bulk of the abdominal contents.

The judicious use of posture is often of value; for example, frequently a large, apparently irreducible hernia in the lower abdomen may become easily reduced by putting the patient in the Trendelenburg position for a few days.

OPERATION

These patients almost invariably have loose, pendulous abdomens. The tissues are thinned out and stretched and devitalized by pressure and interference with blood and nerve supply. Therefore, such tissues are subnormal and not the best material for sound healing and strength, so that removal of the hernial sac and the restoration of normal anatomy, that is, simple closure, layer to layer, is pretty sure to be unsuccessful. For this reason various and ingenious plastic operations have been devised to increase the strength of the repair. Procedures such as the Mayo, the Blake, and various other modifications, have given a large percentage of success but are not always applicable or successful. The repairs involving the use of fascia lata transplants have some disadvantages but will always have some application.

The operation which we are about to describe is in the plastic group and might be called plastic reconstruction of the abdominal wall. Spinal novocaine is the anesthetic of choice unless there are contraindications to its use, in which case local anesthesia or ether may be employed. The scar tissue of the former operation is first dissected off, taking care not to injure the contents of the sac. The hernial sac is then opened and its contents reduced. The sac is then freed from its surrounding structures and removed down to its neck. The neck of the sac we consider to be of great importance in determining the result. It is usually composed of thick, firm, almost scar tissue in addition to the peritoneum, and makes a fine buttress to close the hernial opening.

After the abdomen has been inspected and anything necessary in the way of operation done, such as freeing adhesions, the ring is closed with interrupted sutures of No. 2 chromic catgut. From here on the operation is extra-abdominal, and we may proceed deliberately to the plastic closure. Success depends on isolating firm, strong fascia on both sides of the hernia. This is invariably present, although it may be retracted to an astonishing distance.

Since most operations involve incision through fascia and splitting of muscle, we only have to dissect far enough to find and identify the fascial margins. These structures should be cleaned of fat for proper identification and handling. The two edges of fascia which we have identified are now sutured together with interrupted

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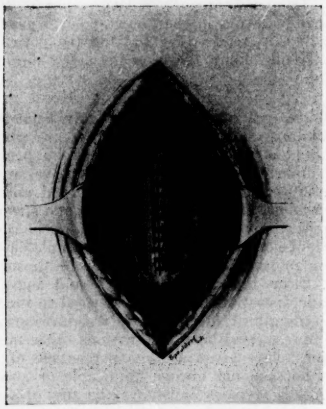
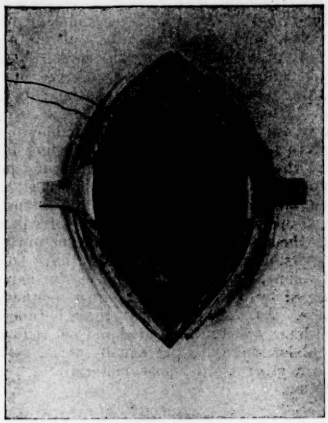
†Hepburn—Visiting Surgeon, Boston City Hospital. For record and address of author see "This Week's Issue", page 1062.

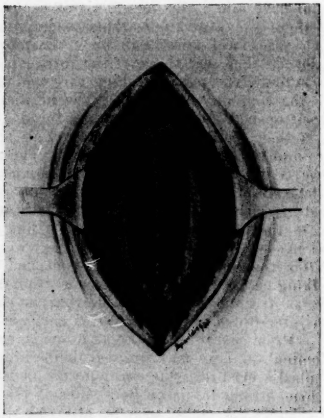
No. 2 chromic catgut sutures. An incision is made in the fascia on each side and parallel with the suture line and one-half inch distant from it. The two small flaps thus marked out of fascia formed by the two flaps. This leaves a rather large gap in the rectus fascia on each side of the suture line. In the floor of the gap lies muscle. Right and left on each side



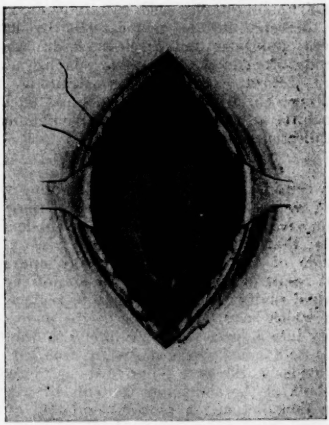
1. This shows the hernial sac closed, and the fascial margins sutured. The two parallel incisions in the fascia are indicated.



2. Showing the method of suturing the two medial flaps.



3. This shows the preceding step completed.



4. This shows the approximation of the two lateral flaps.

are turned inward and outward respectively over the first line of fascial sutures and then sutured with No. 2 chromic catgut. This leaves the hernial opening closed, so far, with the combined scar tissue and peritoneum of the original opening, one layer of fascia, and the second layer of the suture line we have intact fascia. The resultant two fascial margins are now sutured together, covering in everything that has been done. This step is often somewhat difficult on account of the tension, but by having assistants pressing the sides of the abdominal wall to-

gether and another assistant pressing downward on the suture line, this may be accomplished without undue tension.

The skin is now closed with silkworm gut, with or without drainage, according to the amount of oozing present. Since there has been such a large amount of catgut used, it is, perhaps, better to avoid drainage wherever possible; and if drainage is used, it must be placed away from contact with the line of sutures.

For dressing we use dry sterile gauze and a large strip of adhesive plaster, one foot wide, which encircles three-quarters of the circumference of the body, reinforced above and below by narrower strips of adhesive plaster; and the whole reinforced by a firmly applied Scultetus binder.

Coughing, vomiting and retching must be kept at a minimum in order to avoid undue strain on the repair; this is especially important in cases of chronic bronchitis and asthma. It is our custom in such cases to keep patients narcotized almost to the border of semiconsciousness for several days so as to prevent coughing almost entirely.

We have operated on 115 cases of postoperative hernia with the above technique without mortality and with four small recurrences. No case has been refused operation and in no case was it necessary to use fascia lata or other transplants.

We would emphasize that preoperative weight reduction, preservation of the hernial ring intact, invariable identification and careful dissection of fascia, firm dressing, and avoidance of postoperative straining are the factors which are most important in determining the result.

WHAT WE HAVE LEARNED FROM THE TEN YEAR PROGRAM IN MASSACHUSETTS*

BY DAVID ZACKS, M.D.†

IT is an honor and a pleasure to report to this meeting what we have learned from the Ten Year Program, now better called the Chadwick Clinics because in Massachusetts, Dr. H. D. Chadwick is a synonym for Childhood Tuberculosis. My contribution is based on personal experience in the field since the beginning of the Clinics in the Fall of 1924 and on analyses of samples, from time to time, of the vast data which have accumulated from the examinations of over 100,000 school children.

Let me emphasize at the beginning that these Clinics are not merely an experimental fact finding survey. They are a diagnostic service, statewide in scope, supplementing the work of the existing Tuberculosis Dispensaries and Sanatoria. They were inaugurated to put into practical application the newer knowledge on Tuberculosis which has accumulated as a result of studies since 1903 by Behring, Gohn, Ranke, Assmann, Wessler, Opie, McPhedran, Krause, Morgan and Chadwick; to name only a few. The significant contribution of these students is the working hypothesis that tuberculosis can, for practical purposes, be arbitrarily subdivided into two distinct phases; the child-phase, which almost always develops when a child is exposed for the first time to an infecting dose of tubercle bacilli, and the adult-phase, which supervenes by reinfections if the child surviving the first implantation is continued in an unfavorable environment, particularly to further exposure in the family group to shock doses of tubercle bacilli.

It is well known that tuberculosis still kills large numbers of infants and children up to the age of four years. Then there is a period of low mortality, a golden age, between the ages of five to fourteen. After this period the death rate again rises rather sharply and Tuberculosis continues to be the first killer in the age group fifteen to thirty-nine especially young women. It is the function of these Clinics to put the x-ray eye, so to speak, on this age group of least mortality, in order to learn under what circumstances tuberculosis evolves or develops from the Childhood Type into the adult or killing phase of tuberculosis and to apply this knowledge so far as possible to the prevention of the fatal type in the adolescent boy and girl.

Here, I shall digress to tell you, without entering into details, which vary in different places, just how we go about this work in Massachusetts. Written requests for the Clinics are made jointly by the local Board of Health and School Committee. A preliminary educational campaign is then instituted, which consists of talks to groups of physicians, teachers, nurses, parent-teacher associations, other organizations and to high school pupils. Request blanks are then distributed by the room teachers to all the pupils in the public and parochial schools for signature by parent or guardian. A home visit and personal appeal is subsequently made by school and health nurses to parents who fail to sign. In this way about 50-60% of the school population is obtained for testing.

The tuberculin testing is applied by the von Pirquet method and when the reading of the arms is made three to five days later, then x-raying of the chest is also made on the children who react. About 30% of children on an average usually react. Still later a physical examination

*Address delivered at the Inaugural Banquet of the New England Health Institute, April 20, at Portland, Maine.

†Zacks—Supervisor of Clinics, Massachusetts State Department of Public Health. For record and address of author see "This Week's Issue", page 1062.

is made on those who show significant pathology on the x-ray film. Reports of findings are sent to the family physician and parents and a suitable blank is provided for the school nurse's follow-up. Both adult and childhood type of tuberculosis are reported to the board of health. Children with pulmonary disease are recommended for sanatorium treatment and some forms of childhood type also, especially when an open case is found in the family.

Yearly, after this preliminary survey, a check-up is made on all children who were placed on the list for follow-up. This check-up includes an x-ray of the chest, physical examination, and whenever practical, the tuberculin test. At this check-up a searching study is made of the family background and further steps are taken to break contact wherever found. If recommendation for sanatorium treatment is not carried out in reasonable time, the matter is taken up with the family physician, if there is one, and with the local board of health. In some instances, social service is called upon for investigation.

Now that the Clinics are in the seventh year of existence, what has been learned that is significant?

In the first place, we have learned that diagnostic clinics, state-wide in scope, are a feasible and practical procedure with the help of the automobile and portable x-ray apparatus. It is not an easy task, as you may well imagine, and cannot be accomplished without the full coöperation of local Boards of Health, school officials, teachers and above all, the interest and enthusiasm of the school and public health nurses. With a personnel of seven physicians, four nurses, four "nutritionists" and nine typists, in the school year 1929-1930, there were tested 49,000 children in the advance Clinic and 5,000 were reëxamined in the follow-up Clinic. The cost was $70,000; a per capita of under $1.50. If all the children were given a physical examination in the advance Clinic, the cost would be much greater; about $3.00.

Serious opposition to tuberculin testing is not encountered. The scarification method of von Pirquet which we use, is just as accurate as the multiple puncture method of Craig and corresponds to the injection intradermally of .01 mg. of tuberculin. If, however, 1.0 mg. of tuberculin is used in children who fail to react to the first dose of .01 mg., 20% more reactors will be found for every age group in children of school age. Any method, however, which requires a retest is not a practical procedure in the routine testing in the field. Furthermore this is not necessary, if the object is the discovery of significant lesions which almost always will be found in children who react to the .01 mg. dose. In our experience, the degree of reaction is of no significance.

In every 100 white children of school age, 2 will be found who exhibit a childhood type of lesion in the x-ray film. These footprints of the tubercle bacilli are found most often in children of families where pulmonary tuberculosis is known to exist; though in some, a thorough investigation has failed to reveal the previous existence of this disease. In several of these instances, the source was infected milk and cervical adenitis was present either by a scar or by an acutely inflamed gland in the neck. In white school children, this type of lesion is found to exist almost always without any symptoms whatever and it is futile to attempt either a diagnosis or a classification without the x-ray film. Underweight is no criterion in the diagnosis of childhood type tuberculosis.

To the uninitiated, this childhood type of lesion appears innocent enough and is interpreted in most instances as a healed lesion and of very little importance. Unfortunately, far too often, by serial x-ray have we been able to observe the development of subapical and apical tuberculosis in these children, particularly of contact families.

The grave apical lesions begin to appear most often in the early teens; the average age in our series is 13.5 years for both boys and girls. The spread is first noticed by the x-ray and occurs in white children equally often with or without symptoms or signs. We have observed this spread in some instances three to five years after the primary nodules were observed. Given time, both signs and symptoms make their appearance, though this too may take several years. The symptoms are often a persistent failure to attain the average weight for height and age, or a stationary weight, most often 15% below the average, very seldom is there an actual loss of weight. There may be a feeling of "easy tire," or a vague feeling of lameness or discomfort about the shoulder blades. Objective symptoms, such as cough, expectoration, hemorrhage, etc., come even much later. A cavity may develop in a child who has perfect school attendance. A child may have a positive sputum which may not be detected in the routine chest examination of a tuberculosis dispensary.

Out of every 1,000 white school children, one child is found with the grave adult type of pulmonary tuberculosis. I have just completed a study of 110 such children who have been followed up from 3 to 7 years. The results will be published but I will give you a few highlights of this study. The average age was 13.5 years for boys and girls but for every boy, there were found 2.8 girls. Two out of every 3 of these came from families in which tuberculosis existed. In 54%, the diagnosis was based on the tuberculin test and x-ray only. Signs and symptoms, however, made their appearance later.

In 66.4% of these 110 children with apical lesions, a childhood type of lesion usually calcified was found in association, more often in the same than in the contralateral lung. From 3 to 7

years later, 23% of these are dead. The average duration of life of these who died was 3.2 years after the first diagnosis. Of the living, most are slowly progressing, a few are working and a few of the girls are married. The girls show the greater mortality for the same period of observation; 23.4% of the girls are dead to 10.2% of the boys. This greater mortality in the girls I found due to the most obvious of reasons; namely, a more advanced process for the same average age than in the boys. Forty-six per cent. of the girls showed bilateral disease in the first examination to 20.6% of the boys. For some reason the tuberculous lesion, once established, progresses more rapidly in the girls.

An investigation of the families of these 110 children shows some amazing findings. One hundred and seven families are represented. In 69, (64.4%), tuberculosis has been known to exist. The number of persons in these 69 families are 422, with 177 pulmonary cases and 87 deaths. In other words, 2 out of every 3 children who exhibit grave tuberculosis lesions of the adult type come from families that show a tuberculosis morbidity of 41.7% and a case mortality of 49.1%. These considerations point to the family relationship as the source of greatest danger to childhood and youth. To these should be added the danger in the schools, the danger in the unknown source and the danger in unpasteurized milk.

Any single method that will reveal these dangers should obviously be the method of choice. General application of the tuberculin test reveals the infected children. X-ray of the chests of these reactors will reveal the significant lesions of the childhood type and the dangerous lesions of the adult type. Investigation will usually reveal the source of infection. The next all important consideration is the breaking of contact where contact exists. This will require further education of the physician as well as the layman, in addition to adequate hospitalization facilities. It requires also a realization of the danger of the incorrigible consumptive and adequate legislation for his control.

To sum up then, we have learned nothing that is really new. What we have learned is that in a comprehensive tuberculosis control program, the newer knowledge in tuberculosis must be applied if we are to protect youth from its greatest danger. Massachusetts, I am happy to report, is showing the way.

HYPERINSULINISM

BY GEORGE H. TUTTLE, M.D.†

IF we accept the present theory that the pancreas is the sole source of insulin production, then hyperinsulinism can only be brought about in two ways according to the hypotheses presented in a preceding paper*: (1) As the blood sugar rises, it stimulates a centre in the vagus nucleus which transmits impulses through filaments of the right vagus nerve directly to each cell of the Islands of Langerhans, causing an outflow of pancreatic insulin into the blood; (2) the acid food from the stomach excites certain hormones, probably secretin, present in the duodenal mucosa, which exert a specific action upon the islet cells, causing the discharge of pancreatic insulin into the blood. The first of these may be called the neurogenic and the second the humoral, pathway. If the hormonal stimulus is not sufficient to hold the blood sugar within normal bounds following each meal, then the rising blood sugar stimulates the brain center and causes discharge of extra insulin by impulses through the right vagus to the cells of the Islands of Langerhans.

Macleod[1] has fully described this newly discovered neurogenic control of the discharge of pancreatic insulin, as proved by the recent experiments of La Barre. But it is the purpose of this paper to offer further evidence of the existence of an extra-pancreatic (or cellular) insulin and to show that an increase of this insulin, especially in cancerous cases, may also produce hyperinsulinism.

The presence of hyperinsulinism in any case, of course, shows that there is an overproduction of some kind of insulin but does not tell us which it is. In a recent article[2], by calculations from the Soskin Tables[3] of the metabolism of ten depancreatized dogs, I have been able to show that large amounts of glucose were utilized daily by these dogs although all insulin had been supposedly removed from them by pancreatectomy. Since sugar cannot oxidize without the assistance of insulin, some kind of insulin must still exist in the depancreatized dog. This insulin I have called cellular insulin.

Although six or seven cases of hyperinsulinism have been reported and commented upon, as being examples of an excessive production of insulin from the pancreas, two cases cannot be explained satisfactorily in this way[4]. They were not of a cancerous nature nor did they show any signs of abnormality in the pancreas. Although resection of a part of the pancreas gave temporary relief, the symptoms returned as the pancreas regained its normal size. In two other cases, one of primary cancer of the liver and another of primary cancer of the cortex of the suprarenals, there seems to be no way in which pancreatic insulin could have been stimulated by either neurogenic or humoral paths as described above and

*Is Diabetes Caused by Paralysis of the Pancreatic Filaments of the Right Vagus Nerve? Page 963, issue of May 7, 1921.

†Tuttle—Assistant in Medicine, Massachusetts General Hospital. For record and address of author see "This Week's Issue", page 1062.

it is the purpose of this paper to show that the cellular insulin which has been proved to exist in depancreatized dogs is probably a much more reasonable cause of this condition. Such an insulin must be a product of the individual tissue cells; and these cases show how tremendously it may be stimulated by cancerous growth.

In the case of primary cancer of the liver mentioned above, which was reported in great detail by Nadler and Wolfer[5], a large cancerous growth was accompanied by constant severe symptoms of hypoglycaemia lasting four and one-half months. Early in July, by an exploratory operation, a mass the size of an orange was found in the left lobe of the liver and one the size of a walnut in the right lobe. On August 4th, the patient was re-admitted to the hospital in a comatose condition and quickly revived by orange juice. The patient was given liberal carbohydrate meals with extra meals between times, in spite of which all blood sugar tests were subnormal. By August 14th, the patient was taking 440 gms. of carbohydrate at meals with additional carbohydrate at intervals. By October 9th the total dextrose ingested was 570 gm., besides additional glucose as needed. Reactions became more frequent; the patient also became unable to retain food, but would take orange juice at the time of attacks. Delirium was frequent in this stage. On November 19th, dextrose was purposely withheld and one attack followed another until death ensued. Blood tests through all these months never showed a blood sugar above normal.

At autopsy it was found that the cancer had grown so as to occupy more then 70% of the liver. A special examination of the tumor tissue and of the pancreas was made by Professor Bensley of Chicago, who reported as follows: "The pancreas was normal and the tumor tissue from the liver was not islet tissue. There was neither an obvious increase of islet tissue nor any obvious change in the islets themselves. Both A & B cells were present in about normal proportion and both were well charged with secretory granules. The tumor tissue of the liver tested both by Professor Bensley's neutral gentian stain and by Bowie's combination of ethyl violet and Biebricher's scarlet, gave negative results as regards islet granules in both instances.

It was evident that the cancer was not a metastasis from the Islands of Langerhans; that the pancreas after this enormous production of insulin for 4½ months was neither hypertrophied nor degenerated nor in any way disturbed from its normal condition. From where, then, did the excess insulin come? The fact that the blood sugar never rose above normal limits shows that the pancreas could not have been stimulated by the neurogenic pathway. And this same low blood sugar shows that it could not have been produced by the humoral pathway since the same condition prevailed from October 9th to November 19th, when all food was rejected. Since the pancreas could not have been stimulated by either of the usual pathways to produce this enormous excess of insulin, I suggest that the tissue cells of the liver must have produced it under the stimulus of the cancer. This type of insulin, the existence of which is suggested in depancreatized dogs, I call "cellular insulin," and the idea is supported by the fact that Blotner and Murphy[6] have found in aqueous extracts of normal livers an insulin-like substance which reduces the blood sugar-like insulin. This insulin probably exists in all tissue cells.

Similar cancerous tumors of other glands are associated with hypoglycaemic states, as shown in the case of a cortical cancer of the adrenals reported by Anderson[7]. After pathological examination of this tumor Shields Warren says: "The cancer appears to be a carcinoma of the cortex of the adrenal gland. This is a fairly rapidly growing tumor with numerous giant cells and multiple mitoses. A striking feature is the large vacuoles in the nuclei of the tumor cells, which give me the impression that they originally contained glycogen. Certain tumors do contain very large amounts of glycogen and also are known either to produce insulin or a substance very similar to it. This substance produced by tumors goes by the name of insuloid in the literature. Certain of the experimental rat tumors are known to produce considerable amounts of insulin-like substance." This substance I believe to be cellular insulin.

These two cases I submit as offering additional proof of the existence of an extra-pancreatic (or cellular) insulin, which is to be found generally in the tissue cells. In invertebrate animals there is no pancreas and yet carbohydrates oxidize and glycogen forms as in vertebrates. Since neither of these things can occur without the assistance of insulin, some kind of insulin must be present, and this is, presumably, cellular insulin.

The association of cancerous growth with such excessive increase of extra-pancreatic insulin makes one wonder which is the cause and which the effect in such conditions. It is known that cancerous tumors absorb ten times as much sugar from the blood as simple tumors, and, of course, this great stimulation by carbohydrate would account for the marked increase of cellular insulin. On the other hand, if we assume that a specific cancer influence excites the increase of cellular insulin, the flow of sugar from the blood to counteract the insulin might be explained on that basis, and the increased nutrition of the part resulting would account for the growth of the cancer up to the point of degeneration of the cancer cells from overgrowth. In any event, cellular insulin and cancerous growth are very intimately associated.

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WHAT THE COMMITTEE ON THE COSTS OF MEDICAL CARE IS TRYING TO DO*

BY CHANNING FROTHINGHAM, M.D.†

THE Committee on the Costs of Medical Care is the outgrowth of an informal conference of fourteen physicians, sanitarians and economists who met in Washington, D. C., on April 1, 1926. Preceding this during 1925 and 1926 on several occasions members of this group had discussed informally some of the numerous problems regarding the economics of medicine. At this conference a committee of five was selected to study the problem further, and as a result of its work a second conference was held on May 17, 1927, in Washington at the time of the annual meeting of the American Medical Association. This conference was attended by about sixty individuals representing the interested fields and resulted in the formation of the Committee on the Cost of Medical Care with a membership of forty-five. At the present time the committee consists of approximately this number of whom about one-half hold the degree of Doctor of Medicine and represent the fields of public health and industrial medicine as well as the practice of medicine. Included in the other half of the committee are representatives of the dental and nursing professions, life insurance companies, various institutions and organizations, as well as eminent economists, and representatives of the general public.

Perhaps the best proof of how important these economic problems in medicine are considered by thoughtful people is the fact that the great foundations in this country and others in control of funds will have contributed approximately one million dollars to defray the expenses of this committee for a five-year programme of study.

At the start this committee was called the Committee on the Cost of Medical Care, but as its studies developed it became evident that the subject was too comprehensive to be included under this title, and the name of the committee was changed to the Committee on the Costs of Medical Care.

The objects of this committee may be grouped under the following six headings:

1. The accumulation of data in regard to the need for medical service in the broad sense in this country.
2. The accumulation of data in regard to the facilities for providing such service in this country.
3. A study of the cost of adequate medical service and the return for such service to the physicians.
4. An investigation into why the costs of adequate medical care have been steadily increasing.
5. The creation of a constructive programme to help to solve the problems created by the rising costs of medical care.
6. Stimulation of interest in this whole problem of the economics of medicine especially on the part of the medical profession.

During its short existence the committee has been carrying on numerous researches in order to accumulate data about the points taken up for consideration, and are publishing the results of these studies from time to time. In the remainder of the five-year period in addition to further studies the committee is anxious to try to formulate a constructive programme for the relief of the burdens imposed by the existing conditions in the economics of medicine. The committee feels that it must have the help of the medical profession especially and others who are interested in regard to suggestions of plans for the solution of the various problems.

In the presentation this evening I will not discuss the data accumulated by the researches of the committee in regard to the first three objects mentioned above but will only take up some of the reasons which the committee has brought out as to why the costs of medical care are increasing and what seems to be the solution of some of these problems. I have formed my ideas in regard to these points which the committee has brought out from reading its various reports and from listening to the discussions at one of the two day meetings of the committee held in Washington in November 1930, and from personal opinions in regard to these problems. It should be kept in mind that the views expressed tonight are my own and do not represent the official opinion of the committee. It may well be that the committee would not be in accord with these views. I have, however, attempted to formulate from the data at

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†Frothingham—Physician to Peter Bent Brigham Hospital. For record and address of author see "This Week's Issue", page 1062.

hand some of the points which seem definite, and which I thought might be of interest to your society. Of course this discussion will only cover a part of the many problems.

In taking up the question of why the costs of medical care are increasing, it must be realized that when it is a question of life or health each individual wants to have the best advice and treatment. Also in such problems each community likes to provide the best for the more unfortunate members of that community who are dependent upon charity, and in medicine as is usual in other fields, the best is usually expensive.

The costs of medical care which have caused this pronounced increase may be divided into necessary ones and unnecessary ones. Tonight a brief summary of the factors in both groups will be given, and then a short discussion will follow of how the unnecessary costs may be eliminated and the necessary ones in some measure provided for.

NECESSARY INCREASES IN THE COSTS OF MEDICAL CARE

The capital investment in obtaining an M.D. or a D.M.D. degree is steadily increasing because of time and expense needed to obtain such a degree, and the expenses associated with providing a suitable education to the students by the medical and dental schools. It is only reasonable, therefore, that an appropriate return on the capital investment should be received, and therefore, physicians and dentists should receive more income than formerly.

In order to become a specialist worthy of the name a further capital investment in the form of prolonged study is required, and therefore, again an appropriate return on this investment is only fair, and the specialist is entitled to more return than the less highly trained individual.

A proper diagnosis at the present time frequently can only be made with the aid of elaborate and expensive equipment which naturally adds to the expense of diagnosis in addition to the professional fees. In like manner for the proper treatment of certain diseases expensive equipment is necessary for which some one must pay. The days of operating upon the kitchen table in surroundings entirely unprepared for the emergencies of surgery have fortunately practically disappeared. In order to have proper facilities for surgical and other special forms of treatment suitable plants are necessary which cost considerable amounts of money.

The American College of Surgeons is steadily trying to improve the standards of hospitals throughout the country. The results of these efforts have been most gratifying, especially in regard to the character of the service which the hospitals have rendered to their communities, but naturally the improvement in conditions has been associated with an increase in the expense for the communities in which these hospitals are situated.

The actual costs of medicines used in treatment are increasing. The complicated preparations of arsenic for example which are so effective in the treatment of syphilis are much more expensive than the simpler but less effective preparations of mercury which were formerly used exclusively.

The education of the trained nurse is a much more elaborate procedure and represents an increase in capital investment both for the individual nurse and for the hospital providing the training facilities, and therefore, the nurse is entitled to a larger return than formerly and the hospital must be reimbursed for the extra outlay.

When one realizes how much the Social Service Department is used, not only as an aid to diagnosis, but as an adjunct to the treatment of disease, one wonders how the medical profession in former times was able to do satisfactory work without the social service worker. Some one, however, must not only pay the social worker but provide for the maintenance of the department and the education of the workers in this special field.

In the treatment of certain diseases, occupational therapy is an important adjunct to our therapeutic procedures, but the occupational therapist must be paid to say nothing of the expense of the equipment for this work and the cost of training individuals to properly carry it out.

No large hospital or medical school should be satisfied unless research is being carried on in the institution, and some institutions are entirely devoted to this work. Research work is expensive and thus adds appreciably to the general cost of medical care.

Preventive medicine, which is an important factor in reducing the prevalence of disease and thus expense to individuals produces an added cost both directly to the individual due to the need of a physician to apply the various procedures which have been worked out to prevent disease, and also indirectly through taxation for the preparation of vaccines, antitoxins and the like. In addition to these costs are the salaries and expenses of the public health officials.

As all of the above factors are necessary for the proper protection of the public against disease and the care of individuals who are sick the increases which they produce in the costs must be accepted and in some way provided for. Unfortunately there are many other factors which tend to increase the costs of medical care for the individual and for the community as a whole which are quite unnecessary and which could well be eliminated. A few of these factors, which have been brought out by the researches of this committee and by other publications and discussions will be presented.

UNNECESSARY INCREASES IN THE COSTS OF MEDICAL CARE

In the first place there is altogether too much unnecessary charity dispensed by the medical profession and by the hospitals. Lying side by side in the same ward of a hospital there may be two patients who have been operated on without a professional fee and who are being charged and possibly are paying the same amounts to the hospital, yet there may be a marked difference in the financial condition of these two patients. Thus with certain individuals not paying their appropriate share of the expense of their illness some other individuals will have to pay more than their share to make up for this abused charity.

Frequently we see in our hospitals patients who will pay more money than they can well afford for the details of their comfort in the hospital, and ofttimes as a result fail to pay the physician or surgeon who administers to them, thus cutting down the just income of the physician or surgeon which must be made up by some other patient. The difference between the expenses necessary for comfort and those necessary for welfare is frequently not appreciated by certain types of patients or else intentionally ignored by them.

Unfortunately patients are sometimes given poor advice by members of the medical and dental professions who are sincere but inefficient, or by poorly trained specialists so that the advice is not of value, and no benefit is obtained from the money expended. Eventually these patients must duplicate their expenses in seeking further professional advice.

The unsatisfactory organization of the medical service for individuals frequently adds tremendously and unnecessarily to the expense. One of the most striking examples of this is the tendency for individuals to go to specialists direct without being referred by their general medical adviser. Frequently such visits are quite unnecessary and often because of the failure of the specialist to know about intimate relations in the home the advice given is inadequate. This is often further aggravated by one specialist referring the patient to another specialist rather than to the general medical adviser of that individual. Unfortunately often the family physician feels that he is not able to carry out the diagnostic or therapeutic procedures so well as the specialist when in fact he can do so just as well. This feeling has developed among the more modest and conscientious practitioners because of the exaggerated reports that gain circulation in regard to the ability of this or that specialist. Much expense is created by the unnecessary or unintelligent use of specialists.

There is a tremendous amount of money spent for medicines which are of little or no value in combating disease. In many instances these medicines are bought directly by the individuals, but also unfortunately in many instances physicians prescribe medicines which are of little real value and often quite expensive. In one of the surveys by the Committee on the Costs of Medical Care it was found in a certain community that more money was spent on medication than was spent in fees to the medical profession.

The employment of the cults for diagnosis and treatment adds to costs of medical care for many people. For although it must be admitted that these various cults relieve symptoms based upon vague pathology, there is no evidence that they influence the course of definite organic disease and so eventually many of these patients must seek advice elsewhere with additional expense. It probably is the experience of most practicing physicians that patients come who have given a great deal of their money to the cultist without a proper diagnosis having been made or effective treatment instituted. To add to the irony of the situation often these patients have no money left with which to reimburse the physician who gives them good advice.

The element of travel and the expenses associated with it become quite a factor in the costs of medical care, and often needlessly so. This has developed as a result of the absurd viewpoints of certain individuals that the doctor in the larger cities must know more than the doctor in the rural districts or smaller cities. The physicians in the larger centers definitely have the advantage of special expensive equipment which in certain cases is essential for diagnosis and treatment, and therefore, patients must travel to obtain this special service, unless the communities will provide opportunities for such service to their own physicians. Often, however, patients travel to other doctors when the opportunity exists for proper service at home. Another angle of this problem is the fact that since communities will not supply their physicians with appropriate hospitals and other expensive facilities, the better trained men are loath to go away from the larger centers and necessary equipments.

There exists today in the United States a tremendous amount of preventable disease, the care of which costs a tremendous amount of money. If this money could be diverted from the treatment of preventable disease to the necessary increases in the costs of the medical care the burden would be just so much lessened.

Although it is obvious that a well-trained nurse is better fitted for the care of a difficult medical or surgical problem than a less elaborately trained one, it is also obvious that frequently there is needed in the home to help out in the presence of disease a woman who is not so completely trained as the graduates of many of our modern training schools. Such an attendant upon the sick will naturally not receive

so much return for her services, because the capital outlay in her training has been less and she is less well equipped but sufficiently so for the particular problem. The lack of such women in the community makes it necessary to employ a more expensive nurse than necessary and thus adds to the financial burden in many homes in the presence of illness.

The reduplication of facilities for the diagnosis and care of disease in having hospitals for special types of disease increases the unnecessary expenses. In addition to the so-called overhead expenses for housing, heating, lighting, feeding, etc., which are increased by the duplication of plants, the duplication of special apparatuses for diagnosis and treatment which should be in common use in all types of disease but which may not be used all the time in certain hospitals still further adds to the expense. As time goes on the problems of diagnosis call for elaborate equipment for complete study in cases of mental upset, obstetrics, children's disorders, eye and ear diseases and orthopedic problems, etc., as well as in hospitals for so-called general medical and surgical disorders. In addition to the unnecessary expense created by the number of special hospitals the division of work in hospitals into medical and surgical services from the point of view of diagnosis creates tremendous reduplication of equipment and records within the hospital.

PROGRAMME FOR MEETING THE RISING COSTS OF MEDICAL CARE

In addition to formulating a plan to meet the necessary increases in the costs of medical care and to distribute this burden more evenly throughout the community, it seems logical first to attempt to eliminate so far as possible the unnecessary costs in medical care, so that there will be available just so much more money to meet the necessary increases in costs. Suggestions in regard to the best method for eliminating the unnecessary additions to the costs of medical care which have been mentioned above will now be taken up.

The reorganization of the methods for dispensing charity work in our various institutions should receive immediate attention. Some scheme should be worked out so that, if a person comes to a charitable institution because he is not able to pay the full expenses of private care but can contribute something, that person shall contribute something in the nature of professional fees as well as for his board and lodgings. With more contributors the proportion paid by those more fortunately fixed financially should be lessened without diminishing the total amount for the physicians or increasing their work. Already some experiments in this line have been tried, notably the Baker Memorial Hospital at the Massachusetts General Hospital, and an experimental scheme which is being worked out in Brattleboro, Vermont and in New Bedford, Massachusetts. Active in the development of this experiment is Mr. Richards M. Bradley of Boston.

It is only by the education of the public that the difference between added expense for comfort and the expense for necessary care can be brought out. On the other hand some individuals apparently wilfully will incur more expense than is necessary, and some check upon the resources of individuals should be made when they apply for accommodations preparatory to treatment or diagnosis so that some money will be left for the physician, or at least some method worked out so that the proper payment for professional services will be guaranteed.

In order to eliminate the unnecessary expense incurred by the employment of poorly qualified physicians and dentists without obtaining satisfactory results and thus resulting in duplication of the expense, the standards of medical education and the standards for admission to practice should be maintained where they are proper and improved where they are not. To accomplish this the public and especially the legislators should be educated in regard to what are the proper standards. In like manner it is important to establish better standards in regard to what constitutes being a specialist so that the public will not spend money upon self-styled specialists who are not prepared to render appropriate service. This will call not only for education of the public but for legislation or other methods of standardization for at the present time one may become a specialist simply by announcing the fact. Some plan must be worked out, so that the public can feel that when they are going to a specialist they are going to one in fact rather than just to one who claims the title.

Frequently one hears the complaint that the general practitioner has disappeared and that it is on this account that the organization of one's medical care is poorly handled and that patients tend to drift to specialists on their own initiative. Considerable education of the public is necessary on this point. One can hardly expect one person alone to do a general practice in the sense of taking entire care of an individual's medical problems at the present time in the way it was done in the past when our medical knowledge was less. It would be foolhardy for the same man who was making calls on patients with acute illnesses in the home to try to handle psychiatric problems from the point of view of treatment, to do major surgery, to perform Caesarean sections, and to operate on brain tumors, to say nothing of using the cystoscope for urological diagnosis, the esophagoscope and the bronchoscope in their respective fields and of making proper interpretation of x-ray pictures. Therefore, what the public needs is not a general practitioner who can do everything but a

medical man on call to see them in the home or office who is skilled enough to make a diagnosis and carry out treatment unless the treatment calls for special training. Such a physician will need assistance in diagnosis in some cases where special examinations must be made which require elaborate equipment such as the x-ray plant or special technical skill such as in the use of the cystoscope or bronchoscope; but the general medical man should take upon himself the duty of interpreting the reports of the specialist and articulating them with the individual patient's particular problem. In like manner certain conditions will call for special treatment beyond the ability of the general medical adviser, and in these cases the patient should be guided to the specialist by the general medical adviser. It is the failure of patients to have one physician to whom they turn for all their problems and have him either handle the problems himself or guide them to others that adds to the unnecessary expense associated with the handling of sickness. How often has the physician in so-called general practice seen his patients incur, by going to specialists direct, tremendous expense and receive poor advice about some set of symptoms often leading to unnecessary operations, when an intimate knowledge of the home conditions unknown to the specialists would show that the diagnosis rested upon some social problem rather than upon any organic disease. In addition the family physician should be stimulated to assume more and more responsibility and to call upon specialists for diagnosis or treatment only when the indications for their need are clear.

To eliminate the unnecessary and valueless use of medicines by the public without the recommendation of those qualified to give it means a laborious education of the public. It will require the elimination of advertisements in regard to the value of preparations which are not based upon scientific facts. It also means the elimination from our public press of the advertisements in regard to disease and its treatment, practically all of which are inaccurate. In addition to educating the public on these points, the medical profession must reorganize its custom of treating diseases by medicines which are not of real value in the treatment and simply add to the expense of the illness. How often does one see beside the bed a series of pills and bottles of fluid medicine to be used in cases of self-limited disease which is probably uninfluenced by the medication. Many a time an explanation to the patient in regard to the nature of the illness and its natural course would satisfy the patient and save the expense of unnecessary medicines. Furthermore physicians should more often choose the less expensive preparations of medicines with the same action.

The elimination of the cults or their proper handling would also save a tremendous amount of unnecessary expense. Although the states through legislation have tried to handle the problem of the cults in various ways there seems to be only one intelligent way to handle them, and that is to educate them in the knowledge of disease. Just so far as a cultist is educated, just so much less danger is he to the community, and just so much less money is wasted upon him. In many states there are special boards of registration for those who wish to practice osteopathy and chiropractic, and these boards often do not require any real knowledge of disease for admission to practice the cult. This is a peculiarly unfortunate way to handle the situation. For it seems reasonable for the laymen to assume that anyone whom the state licenses to care for disease must have some knowledge of disease, and therefore, the layman justly thinks in going to a cultist that his case will be properly diagnosed. With their lack of knowledge of disease such is not the case and the layman is in the position of being treated without being diagnosed. If this only resulted in injury to the ignorant layman it would be unfortunate enough, but such a patient might be the carrier of some serious communicable disease and through the failure of proper diagnosis and advice regarding the prevention of its spread serious damage to the community may result. The states should insist that anyone who practices the healing art should have a knowledge of disease and in those states where this single standard is maintained the problem from the cults is less acute. Any physician with experience must have encountered patients who have spent large sums of money for treatment by cultists which has not only been of no use but which has often been actually harmful to the individual.

If the expense of travel is going to be eliminated from the costs of medical care each community should provide suitable equipment for its physicians to practice medicine in an up-to-date manner. Proper equipment for the practice of medicine is in some instances too elaborate for each physician to secure for himself and must be supplied by the community. This means that in each district within a radius of some fifteen or twenty-five miles there must be diagnostic facilities which should include opportunities for laboratory diagnosis and x-ray study. In addition each community should have an equipment, so that proper treatment may be offered to its inhabitants. A properly equipped small hospital is the best way to secure these features for the community. It is interesting to note that the Commonwealth Fund has aided in the formation of such hospitals in certain rural districts as an experiment along these lines. One of these hospitals is in Farmington, Maine.

Of course, there is no argument against the importance of the eradication of preventable diseases. This can only be accomplished by the education of the public. In each community there are a few misguided individuals who spend their

time, money and energy in trying to defeat the attempts of others to eliminate preventable disease from their midst. The solution of the problem seems to rest upon the education of the public.

If different grades of nurses are desirable from the point of view of economy, the various communities must make some provision for the production of such nurses. Thoughtful hospital superintendents say that the modern training schools can not turn out different grades of nurses. Why this is so is not clear to the writer, in view of the fact that modern universities can turn out students who have obtained different grades of academic standing, such as the A.B. degree, A.M. degree, M.D. degree, D.M.D. degree, Ph.D. degree or the D.Sc. degree. Each of these degrees which require more time for attainment represents more capital investment, and their recipients usually are in a position to reap a larger reward in proportion to the time spent in study. It seems as though our modern institutions for the care of the sick ought to be able to turn out graduates with different amounts of education along the nursing line just as our universities turn out graduates with different degrees. The women who had spent less time in preparation would naturally expect less financial return for their services. If different grades of nurses could not be turned out from the same institutions at least different institutions could vary in the type and length of course they give for the training of women to care for the sick. Already in Boston such a plan is in effect as is shown by the Household Nursing Association School for trained attendants.

The tremendous overhead expense in having so many individual hospitals could be eliminated by having larger hospitals organized to take care of all types of medical problems, and the elimination of expense in duplication of records and examinations within a hospital could be cut down by reorganization of the methods in many of our hospitals of caring for the sick. An example of how the modern tendency to have medical and surgical services for both diagnosis and treatment in our hospitals works unsatisfactory was shown by a study from the Out-Patient Department records of the Peter Bent Brigham Hospital which was included in the report from the Physician-in-Chief in the annual report of the hospital for 1929. This was a study of what happened to two patients who came to the hospital with the same complaint. Upon the decision of the clerk in the admitting office one was admitted to the surgical service and the other to the medical service. The work-up of these cases we may justly assume was done in all sincerity and all completeness, yet the two records are about as different as black is from white. Either one of these cases was improperly worked up, or upon the other was expended an unnecessary amount of money, time and energy.

The solution of this problem of the unnecessary increase in overhead expenditure and reduplication of activities with its added expense within a hospital seems to lie in having larger hospitals which will be prepared to diagnose and care for all types of illness. In each of these large hospitals there should be a diagnostic service to which all patients are admitted and attached to which service should be all the physicians and surgeons of the staff. The patients should remain on this diagnostic service only until their problem is solved and treatment recommended when they can be referred to special groups in the hospital for the continuation of the treatment.

A few years ago the Boston Psychopathic Hospital was built as an isolated unit and no provision was made for the study of the patients from the point of view of internal medicine. Now the physicians in charge are very properly demanding expensive equipment for the proper study of their patients which could easily be supplied with much less cost if the hospital were a part of a general hospital with modern equipment. The same may be said in regard to isolated obstetrical, surgical, orthopedic and children's hospitals.

As suggested above if these unnecessary, additional expenses in the care of the sick are eliminated, there will be so much more money available to meet the necessary increases in costs.

Just how these necessary increases in costs can be met with the least burden for the individual and the community is a problem that is difficult to solve. Already plans for different types of health insurance are in existence. This insurance is arranged either for cash payments in case of sickness or for medical services to the individual who is insured. The Government, not only of the individual states, but also the Federal Government, is at the present time practicing medicine to some extent. In the Commonwealth of Massachusetts for example the State is practicing medicine upon the insane, upon those with tuberculosis, upon those with cancer, and already plans are being made to care for other groups of the sick.

The question may well be raised: Why is not the solution of the problem to have the Government take over the care of the sick as well as the organization for the prevention of disease and have the expenses including the salaries of its physicians met by taxation? The Committee on the Costs of Medical Care feels very strongly that this solution of the problem would be exceedingly unfortunate, and primarily so for the very fundamental reason that in so doing the personal relation between the physician and patient is bound to be destroyed. One of the most fundamental features of the care of the sick and the practice of medicine in the broad sense

is this personal relation between the physician and the individual patient. In order to make that personal relation one of importance, it seems essential to have the livelihood of the physician depend upon his success in handling the individual problem. Do not let it be thought that the committee feels that members of the profession working on salaries are not capable of doing good work. Of course, it is well recognized that many physicians and dentists are working on salaries in institutions and elsewhere and doing extraordinarily good work in the care of the sick and in the prevention of disease. In the care of the individual in private life, however, it is felt that the stimulus given to the individual physician by the fact that his success depends upon his treatment of the individual problem is one of the greatest assets towards the success of the profession as a whole. Therefore, in the solution of this problem, it seems fundamental that the family physician and his personal relation to the individual patient must be maintained, and this in itself does not permit of the universal adoption of so-called State medicine.

WHO IS GOING TO SOLVE THESE PROBLEMS?

Suggestions are appearing from the lay press in regard to the solution of these problems. Legislators are at work upon them. The medical profession is also trying different experiments, such as so-called group practice and the like. The Committee on the Costs of Medical Care is looking for suggestions and trying to formulate a constructive programme. Life insurance companies are at work upon it. It is obvious that many groups in the country in addition to the medical profession are trying to work out some solution to this problem so that the individual or the family overtaken by illness will not have too heavy a burden.

The committee feels sure that these problems are too complicated to be solved by any one group. It is obvious from the above that the education of the public is a tremendous factor in some of these problems. The education of the legislators is another. Those concerned with the education of physicians, dentists, nurses, social service workers, etc., are also involved. The press must be taught what harm is done by the unfortunate advertising that appears in the newspapers. It seems, therefore, that many, if not all walks of life, are involved, not only in the costs of medical care but in trying to make them less of a burden.

Therefore since the solution of these problems involves so many groups it is not a question of who will solve the problems but who will lead the way and guide those who are helping to solve them. The Committee on the Costs of Medical Care feels very strongly that this leadership must be assumed by the medical and dental professions.

In order to assume this leadership the medical and dental professions must give the problems considerable thought not only as individuals but collectively.

THE MEDICAL MUSEUM. ITS ROLE IN THE TEACHING OF MEDICAL HISTORY*

BY CHARLES F. PAINTER, M.D.†

THE recent demonstration, at a meeting of this Club, of the advantages of a graphic method of fixing certain of the facts and sketching in certain of the personages of medical history suggests the thought that we should avail ourselves of more of these modes of study. There are many that lend themselves particularly well to this endeavor. In America we lack many advantages that obtain in the teaching of medicine in older countries. We have grown up so rapidly that our attention has been focused chiefly on the present and the future; the past may take care of itself. We are disposed to discard the tools by which our progress has been achieved without giving a thought to the possible significance they may have for later generations.

In the older civilizations the museum has figured very prominently in routine teaching and its value as a method of measuring the progression of the art and science of medicine is slowly coming to be recognized. From the cultural aspects a study of medical history can be made to play a very important rôle. Time was when members of the medical profession were regarded highly, not only for their professional attainments and their consequent value to the communities in which they dwelt, but because, in their acquisition of technical training, the importance of a cultural development had not been overlooked. No better proof of this can be afforded than may be found in a study of the lives of those who have been distinguished for their contributions to medical progress in the early days of our own national history and, as well, of those who, throughout the world's history, have been the master minds in the profession. Interest in philosophy, history, science and language have characterized these individuals so constantly that one cannot escape from the conclusion that such training played no inconsiderable part in accounting for success in

*Read before the Boston Medical History Club, February 16, 1931.

†Painter—For record and address of author see "This Week's Issue", page 1062.

their chosen work. It certainly could not have failed, moreover, to add interest to the solution of the broad problems of medical practice. The more the intellectual horizon is extended, the less is there a disposition to narrowly restrict the scope of professional activity. The best antidote to the tendency, so conspicuous in our day, to commercialize practice are those studies which are directed to the liberalization of professional education.

We may well take pride in the achievements of modern medicine, just as we are thrilled by all the startling discoveries and inventions that present-day workers in the fields of pure science are almost daily bringing to light, and when, some time, someone shall write an account of scientific achievement, with a proper historical perspective, there will be presented a most fascinating narrative, one which will grip the reader's attention far more inescapably and will carry an infinitely more instructive message than could ever be obtained by one living in the midst of the seething activities of the period during which such advances were being made. The time to make critical estimates of the value to be attached to discoveries and inventions is not in the generation in which they have been made but after time has proven their worth. Many a discovery, though it has not fulfilled all expectations or predictions and, indeed, may have given way altogether to something better, has, nevertheless, an historic value and deserves to be remembered because it *was* a step in the direction of better things. It is probable that at no time has there been so much medical history being made in the world as there has been in the past genefation, as might be expected, in view of the tremendous advances taking place in the contributory sciences of bio-chemistry and physics. Yet he would indeed be an optimist who would venture to write a history of the medical progress of the last generation that would be authentic for the generation to come. The situation is different, however, when one attempts to review the progress of medicine from the dawn of history. No one period, however long, would be so very full of epoch-making discoveries but a perspective of 4000-5000 years should afford an opportunity for uncovering the workings of the human intellect as it has groped its way from its most primitive conceptions in respect to injury and disease, through the mystifying clouds of ignorance and superstition that have always confronted those who have sought to ameliorate physical suffering.

Men are just beginning to view the vast body of medical data that are available for study with the idea of applying the canons of historical research and reducing this chaotic mass of material to something like an orderly arrangement. A study of the practice of the noted charlatans of the profession would show that a majority of the treatments they have advocated are reincarnations of long discarded measures which once had a vogue and were "scrapped" because they proved worthless. The value of a knowledge of medical history in respect to this one thing should be of service in persuading a too credulous lay public to be wary of the extravagant claims of quackery. By the same token, much current medical doctrine that passes unchallenged could doubtless be thrown permanently into the discard if the same care were devoted to its valuation as a trained historian of civilization would give to an epoch in the evolution of a significant social or political movement. The intimate relations that superstition, religion and medicine have sustained to one another from the dawn of history even to our own day would surely be a fruitful field for investigation. Much light might be thrown thereby upon the attitude of mind of many individuals and classes of people whose inability to grasp the significance of established facts in general medicine and public hygiene is, if not a menace to their fellow creatures and themselves, at least a deterrent to the progress of medical science.

Pictorially and in other graphic ways it should be possible to give some representation of the medical ministrations of the priesthood in the days when into their hands was committed the health of the tribe or community. In the same fashion the medicine man or Shaman, clothed in all the fantastic paraphernalia of his office, could be reconstructed to illustrate the persistence of the same attitude of mind in respect to matters medical that prevailed when religion clothed its high priests with the mantle of the physician. The Emmanuel movement, and allied religio-social propaganda, may be only a twentieth-century outcropping of a truth that was once given a far more prominent place in medical practice than is accorded it today. To what extent the truth that is inherent has been extracted and the error that has at times dominated has been expunged, would provide a research problem in historical medicine fraught with much significance to practitioners. The inception of ideas of public and personal hygiene and the vicissitudes that have attended the establishment of such conceptions as we now hold would be of immense value to the medical profession if the steps taken in attainment of our present position were the common property of the profession today.

In the same way, the evolution of the idea that society now holds as to the responsibility of the public to provide accommodations for the needy sick could be traced historically to the times when unemployment, epidemics, religious pilgrimages and war compelled mankind to think in terms of the collective handling of problems of this sort. The first attempts at hospitalization of the sick brought into existence the necessity for attendance upon their physical needs

and the beginnings of benevolent orders and nursing associations naturally followed in the wake of the hospital.

The investigation of the antiquity and distribution over portions of the earth where older civilizations have given way to more modern ones is an intriguing proposition to which the science of paleontology and its congener, paleo-pathology, are destined to contribute much and, indeed, have already furnished a most promising beginning in the researches of the Egyptian Sanitary and Quarantine Department in Alexandria. As a result of investigations carried on there, it has been shown that atheroma, cirrhosis of the liver, croupous pneumonia, and phosphatic calculi in the bladder and pelvis of the kidney were not uncommon diseases in a period of the world's history two to three thousand years before our era. That the valley of the Nile was long ago regarded as a favorable climatic resort for sufferers from tuberculous lesions has doubtless colored the opinions of those who, in more recent times, have advocated this locality as a retreat for phthisical patients. The disease of the spine that Percival Pott made familiar to us through his classical description was apparently common enough in this region hundreds, if not thousands, of years before Pott's time, for at Dakka on the Nile have been disclosed sepulchres in which were skeletons illustrating destructive lesions in the vertebral bodies having all the gross characteristics of osseous tuberculosis. A neolithic skeleton of an antiquity of more than 1000 years was discovered near Heidelberg, indicating an erosive process in the vertebrae. Positive proof is as yet lacking which would justify a diagnosis of tuberculosis, but enough evidence is at hand to demonstrate very clearly the value of researches of this kind in helping to trace back through human history, even into prehistoric times, the existence of diseases upon which we are still engaged in intensive study.

On the surgical side, archeological research is a possible fruitful source of information in regard to historical medicine. The habit of burying implements and tools along with the body of the deceased implies a thoughtfulness for the good of the departed from which it would be reasonable to infer that during life there would likely have been at least an equivalent regard for individual well-being. In 1908, there was exposed a Neanderthal skeleton from the stone age (20,000-90,000 years ago), which was accompanied by tools and weapons, none of which, however, appear to have served any medical purpose. It may well be, nevertheless, that from that period there will at some time be discovered evidences of a primitive knowledge of medicine. Hence the importance of preserving and recording for the purposes of historical investigation all such data. Carl Jaeger has shown that, in the neolithic age, attempts to correct deformities were made; osteomyelitis was apparently not uncommon and in the treatment of fractures good union was secured in 53.8% of a series of broken bones, results that would do credit to modern surgery.

It is, of course, chiefly from the remains of the bony skeleton that most promise has so far been offered for the acquisition of knowledge concerning the diseases of antiquity, but it may be that through a study of epidemics, even though there may be few anatomic remains, valuable information may be procured as a result of modern methods of investigation. It is not unreasonable to suppose that bacteria are susceptible to changes in their life history just as are mammalian and other animal species, and because of this it may chance that diseases which took an epidemic form in the remote past may appear in another, or greatly modified, guise in our times. In the historical investigation of epidemics, therefore, there may be much that will be valuable in piecing together the outline of the evolution of medical thought. In respect to the spread of epidemics, Egyptian records in the form of hieroglyphics or medical papyri are wholly silent, perhaps because the Nile valley was rather out of the way of international travel routes, but in Babylonia and Assyria there is evidence of frequent popular anxiety in regard to the "pest" and similar diseases. In combating most of these the Babylonians had recourse to theurgic ritual and prayers, but in the case of leprosy they did institute a thorough-going preventive measure for the public good; they drove out these sufferers from among their fellows to become for the most part, the prey of wild beasts. In the words of the order of expulsion, "nevermore shall he know the ways of his abiding place". This order appears in the stone landmarks of Babylon and thus the first known public health ordinance directed against communicable disease bears the date of 3500 years ago. Jewish history, after the Babylonian captivity, bears evidence of prophylactic measures embodied in the Pentateuch, serving after more than 1000 years since their first transcription, as the basis of modern preventive measures against infectious disease.

The Greeks, in the 5th century, entered upon a program of town planning and a degree of municipal hygiene not before practiced. That the idea of transmission of disease by contact had gained a hold on human thought is indicated by the fact that a plague, probably typhus, rampant in Thucydides' time (about 429 B.C.) was combated chiefly by "purification of the atmosphere". Fires were lighted in the streets and public squares of Athens to destroy the "miasm". So, also, it was early thought, in respect to the malarial diseases, that a "miasm" arose from swamps and was borne to a distance by the winds. Galen may have had some inkling of this miasmatic theory, but it was really not until the Middle Ages that prophylactic meas-

ures against contagious diseases were at all consistently carried out. During several centuries leprosy had slowly spread to Spain and Gaul and from there to Germany. There were approximately 20,000 lepers in France and Germany alone, at the height of the spread of this disease. It took several hundred years to effect its extermination, which was brought about by the most rigorous exercise of the program of isolation. Subjects of the disease were turned out of the towns and compelled to live with their own kind, condemned to civil death for the remainder of their lives.

From experience in handling this chronic contagious disease the essential principles of isolation and personal cleanliness were extended to the management of other epidemics of a more acute nature. Among these, by the 13th century, were included Phthisis, Anthrax, trachoma, gonorrheal conjunctivitis, scabies, erysipelas and whatever else was mistaken for them. By the time of the Black Death (Bubonic Plague), in the 15th century, there was a very voluminous literature in the form of "tracts" and "pest rules", and a period for isolation was prescribed, at first 30 days (trentina as it was called in Italian speaking countries) and then 40 days (or quarantina), from which is derived our modern term of quarantine. So it was that quarantine measures were established in the 14th century and at Marseilles, in 1383, a station was first set up for this purpose, both for travelers and the ships they came on. Inland cities were accorded a certain protection by keeping a watch at the gates. Where there was reason to suspect that plague sufferers or carriers had been housed in a town, the bedding and household goods were sunned and scoured and, in some cases, burned. Special officials were allotted the task of carrying out quarantine measures. The cities were kept clean and water supplies were protected. This was the status of the preventive measures directed against the spread of contagion during the 15th, 16th, 17th and 18th centuries. In certain of the Southern European countries, where tuberculosis was prevalent, the clothing, bedding and other personal effects of phthisical patients were burned and provisions for the sanitary disposal of the sputum were insisted upon. The fact that most of these safeguards in respect to tuberculosis, were lost sight of in the 17th century, and their value rediscovered in our time, is sufficient reason for laying stress upon the significance of medical history and for preserving in every way for posterity evidences of such successes as have attended the efforts of physicians throughout all time.

From this brief outline of certain historical aspects of man's attempts to solve the problems of health it would appear that there is an immense cultural interest centering in the various steps that have marked the advance of medical science and the art of its application to human needs. The museum is the accepted repository for evidences of the cultural progression of a civilization. Here may be displayed the tangible proofs of those contributions to the culture of a race which illustrate the realization of the ideals that have actuated it. In what more instructive and enlightening way could the aspirations of the medical cult be exemplified than in properly classified collections of material which would compass the whole field in which these activities have been carried on? There are so many varieties of interests to which a museum connected with this library, for instance, could minister that it seems it would be the logical center for collections bearing on the history of medicine, not merely with a local color but of national and world-wide interest. Take, for example, some of the subjects which have just been under review. We have here as a nucleus the carefully selected incunabula belonging to the Bullard collection, which is being added to year by year. These volumes are valuable not merely as curios but for what they contain, reflecting the status of professional thought at that period. In our day the problems of the nursing profession are more or less in the public eye. There has been little disposition to consider these in any light than that of the present. Florence Nightingale, for most of us, marks the beginning of nursing as a calling, but the long line of knightly and clerical orders into whose hands the care of the sick was committed in remote times were doing nursing service and they find their counterpart in many of the social welfare workers of today, who often combine nursing of a certain type with welfare work. By charts, diagrams and pictures, as well as by written texts, the evolution of our present systems of welfare service in their relation to formal nursing could be very well traced.

Books of household remedies upon which our grandmothers, who resided in rural communities, so commonly relied are difficult to obtain in these days, but they were often compilations of popular remedies, the reputation of which had made them a household word for generations. Many of them reach back to very ancient times for their origin. This might be called "folk medicine" and harks back to the medicine of the priests. Closely related to this, if indeed not a part of it, was the "temple medicine" with its votive offerings in the form of stone, bronze, silver, gold and terra cotta arms, legs, eyes or whatever part of the body they chose for the purpose, as they have been unearthed in many localities. Included with these evidences of the varying character of "folk medicine" remedies might be shown of the patron saints of certain diseases as St. Anthony, St. Vitus, St. John, and many another to whom superstitious reverence has ascribed the power of healing in the case of ergotism, glandular diseases, leprosy, convulsions and pestilence.

Progress in the art of surgery could be well outlined in the museum by gathering the tools which the surgeon has employed from the days of flint and stone instruments down through the ages of bronze and iron to our own times. There is in existence in Ghent, as the result of the activities of Professor Deneppe, a collection of over 800 surgical instruments illustrative of the way the surgeons of various times and diverse peoples have sought to adapt the materials at hand, suitable for operative work, to the particular needs of the surgery of their day. In their character they indicate approximately the period when certain surgical procedures were first instituted, e.g., amputations, plastic surgery, removal of cataracts, cutting for stone, vaecination, cupping, and so on. Also the history of mechano-therapy, which had early advocates, could be interestingly shown, for in Hippocrates' time, for example, machines were constructed which, though cumbrous in appearance, would appear to have been efficient for the purpose. These were, notably, for the reduction of certain dislocations and the correction of the kyphoses of Pott's disease. Had Calot, twenty-five years ago, been conversant with medical history, he might not have attempted to revive this futile procedure, attended, as it was, by disastrous results. The history of the development of massage, as we know it today, from the "kneadings" and application of inunctions practiced by the early Greeks, together with the importance they very properly ascribed to gymnastic exercise and baths, could well be represented by a considerable exhibit in the museum plan for the study of medical history.

Still another way to increase a student's interest in the history of medicine is by familiarizing him with the way in which our instruments of precision, employed for diagnostic purposes, were brought into use and who were responsible for their discovery and modification to their present state of perfection. Specula of various sorts, laryngeal reflecting mirrors, tongue depressors, stethoscopes, opthalmoscopes, microscopes, many of these had, in ancient times, crude representatives and nearly all have been the forerunners of more elaborate and perfect mechanisms for investigating the various cavities and passages of the human body. Such material as this, in part at least, is existent in certain museums but rarely, if at all, as part of formal attempts to provide for the teaching of medical history. The Paris Medical Faculty inaugurated such a step at the Sorbonne and Sudhoff has laid the foundations for one in Leipsic, where, since 1891, he has been so active in stimulating students to carry on researches into the history of medicine.

With the ever-increasing interest, in this country, in this subject, it would seem the time had arrived to still further develop this interest and extend existing facilities for emphasizing the cultural aspects of medical education. There could be no better place to make a beginning than here in Boston, where we have a considerable body of medical students distributed in different schools and where we have in this institution, where we now are, a fund of material that could readily be rendered available for all for whom such collections would be helpful.

LEGAL COMPETENCY

In response to a request from the Commissioner of Mental Hygiene of the State of New York for an opinion as to the legal competency of a person discharged as recovered from a hospital for the insane, the Attorney General of that state in a formal opinion calls attention to an opinion of the New York supreme court, stating that "The statute presumes that the state of insanity, like every other sickness, will not be continuous. We all know now that insanity is not incurable, but that people do frequently recover from it." Continuing, the Attorney General says: "It would seem to me that while a person is an inmate of a state institution as an insane person, the superintendent and other physicians connected with such institution would be in a position to closely observe the patient and to decide as to whether said patient had recovered his mind.

"Therefore, I believe that when the superintendent issues a certificate discharging a patient as recovered it is evidence that at the time of said discharge the patient had recovered. As to business transactions the fact that the person in question has at one time been committed as an insane person is not fatal to that person's being able to transact business after being discharged as recovered."—*Bulletin Illinois Department Public Welfare.*

MORTALITY RATES

Telegraphic returns from 81 cities with a total population of thirty-six million for the week ending April 25 indicate a mortality rate of 12.3 as against a rate of 13.4 for the corresponding week of last year. The highest rate (19.1) appears for San Antonio, Texas, and the lowest (5.6) for Lynn, Mass. The highest infant mortality rate (15.9) appears for New Bedford, Mass., and the lowest for Kansas City, Kans., Long Beach, Calif., Lynn, Mass., and Utica, N. Y., which reported no infant mortality.

The annual rate for 81 cities is 13.8 for the seventeen weeks of 1931, as against a rate of 13.3 for the corresponding weeks of 1930.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 17201

DYSPNEA AND CHILLS

MEDICAL DEPARTMENT

First admission. A married American housewife twenty-two years old entered for study November 3, fourteen months and a half before her final admission. The chief complaint was leukorrhea for the past five years and pain in the region of the umbilicus for the past two weeks.

She had very good health until her marriage, five years before entry. Two months after the birth of her first child she began to have a profuse white creamy vaginal discharge. The child's eyes were never inflamed. The discharge persisted. At present it was slightly less profuse but thicker. Douches prescribed by two physicians had given no relief. Three years before entry she had an abortion at one month. A year and a half before admission she had a second child. April 29 of the present year she had another abortion at three months. Since that time she had had considerable dyspnea on exertion. The pregnancies had no effect upon the leukorrhea. For the past two months she had had attacks of tachycardia lasting from fifteen minutes to an hour. Two weeks before admission while sawing wood she was seized with a cramp-like non-radiating pain in the umbilical region, so severe that she could hardly breathe. The pain continued for three days, leaving the region very tender. She remained in bed until October 27. When she got up the old abdominal pain returned. It was in no way related to meals. Whenever she attempted to walk she had nausea, dizziness and diplopia. She was also conscious of very forceful heart action, relieved by a pill given by a physician. The abdominal pain continued. She stayed in bed until October 31. She then tried to get up, but had another heart attack, probably palpitation, and vomited her supper. She went back to bed again, where she stayed until the day of entry. Her last menstrual period began October 30 and ended the day of entry. She noticed nothing abnormal about it. She also had a period from October 3 to 7. She thought she had lost 25 pounds during the past year.

She was an adopted child and knew nothing of her family history. Her husband was well. She did not know that he had ever had a discharge from the penis.

She had colds "all the time" accompanied by swelling of the cervical glands. For the past two weeks she had felt as though she could not keep her hands and feet still. During the past two years her weight had gradually fallen from 105 pounds to 87. During the past six months she had lost considerable strength.

Clinical examination showed an emaciated, poorly developed woman complaining of abdominal pain. There were moderate sized glands under the chin. The heart was slightly enlarged to the left. The left border of dullness was 8 centimeters to the left of midsternum, half a centimeter outside the midclavicular line. A slight thrill was felt in the region of the apex. Loud rough systolic and diastolic murmurs were heard at the apex transmitted to the axilla and also heard at the base, where they were not so loud and the diastolic was not distinct. The action was rapid, the rhythm regular. The pulses were normal. The radials were palpable. The blood pressure was 110/70. There was slight dullness at the apex of the right lung in front. A few expiratory squeaks were heard at the right base in the back but no definite râles. The abdomen was tender at the bottom, particularly in the left lower quadrant. The perineum was slightly lacerated, the cervix moderately lacerated. The fundus was smooth, forward and in good position. The left vault was very tender and definitely thickened. The right kidney was palpable. The spleen was not felt.

Before operation the specific gravity of the urine was 1.016. There was no albumin. The sediment of a non-catheterized specimen was loaded with leukocytes and showed many red blood cells. A preoperative white blood cell count was 14,600. Wassermann and Hinton tests were strongly positive once, moderately positive once.

The temperature was not remarkable except for one rise to 99.4° the day before discharge. The pulse was 69 to 100, the respirations normal.

A medical consultant said there were râles after coughing at each apex and asked for tuberculin skin tests, which were done and were negative. A second medical consultant found no evidence of active disease at the left apex. He found one musical râle at the end of inspiration after cough at the right apex behind.

X-ray examination showed the costophrenic angles clear, the diaphragms equal, regular and normal in excursion. The right hilus shadow was markedly increased in density. There were streamers extending upward towards the apex, a few of them ending just below the clavicle in pinpoint areas of calcification. The left hilus also showed heavy streamers extending upward towards the clavicle and ending in small areas of calcification. The heart shadow showed

marked prominence in the region of the auricle and the pulmonary conus. The transverse diameter of the heart was at the upper limit of normal. The aortic shadow was quite small. There was no definite erosion of the ribs. The left auricle was prominent on both sides of the median line in the anteroposterior view. It was also quite prominent in the rotated position.

November 4 an ether examination of the pelvis was done. A freely movable mass the size of a hen's egg was found in the left vault. The uterus felt normal in position and shape and was free. The cervix was moderately eroded on both lips. It was cauterized with the electric cautery.

The patient was in good condition after operation. A three-hourly chart showed no constantly recurring rise of temperature. November 13 she started to have vaginal bleeding. November 15 she was discharged to the South Medical Outpatient Department.

History of interval. The bleeding continued until her second admission, eleven days after her discharge. She had no abdominal pain but had constant soreness in the left lower quadrant aggravated by coughing and by nothing else. On November 17 she "caught a cold in the lungs". She felt hot all day and had a chill that night. She had cough for three days and a little yellow mucus for two days. During this acute infection she felt at times as though she could not breathe and had pain in the region of the third rib in front radiating towards the axilla, brought on chiefly by turning in bed but somewhat aggravated by coughing and breathing. After the coughing attacks she had palpitation. On November 23 she got up in the morning feeling fairly well. In the evening she began to cough and to have "shaking chills" with each of which her heart suddenly started to pound and stopped just as suddenly in about three minutes. The cough seemed to be in her throat. There was white sputum, even less in amount than before. The cough and chilly sensations continued until her reëntry. The day before reëntry she had slight shooting pains in the arms, hands and legs.

Second admission, November 26.

Clinical examination showed pea-sized submaxillary and posterior cervical glands, bean-sized axillary and inguinal glands. The lungs showed occasional squeaks throughout and an occasional crepitant râle at the left base. The apices were clear. The heart was enlarged in the region of the left auricle and the right ventricle. There was a diastolic apical thrill. The action was regular, the rate 84, the sounds of good quality. A loud blowing systolic murmur was heard at the apex transmitted to the axilla, and a rumbling middiastolic and late diastolic murmur at the apex. The pulmonic second sound had a peculiar metallic quality and occasionally was reduplicated. The blood pressure was 108/76. There was slight tenderness in the right lower quadrant. The spleen was not felt.

The temperature was 98° to 99.8° for the first three days, afterwards 96° to 99° except for two rises to 99.4° and 100° December 7 and 14. The pulse was 80 to 120. The respirations were normal.

Urine examination, not a catheterized specimen, showed the specific gravity 1.022, no albumin, 0 to 3 leukocytes, no red cells. Blood examination showed 11,300 to 13,500 leukocytes, polynuclears 63 per cent, hemoglobin 75 per cent, reds 4,800,000, smear normal. Hinton and Wassermann tests were again strongly positive.

A surgical consultant found the uterus in good position and normal in size, with no evidence of a cyst. There was definite tenderness, more on the left.

While in the ward the patient had three attacks of tachycardia with a rate of about 180, each lasting about twenty minutes. Quinidine gave relief for a while, but after 18 grains had been given the patient was nauseated and dizzy and had coupled beats, regular for a while, with periods of non-coupled beats but irregularity, rate about 80. She had much cough not relieved by benzoin inhalations. December 16 she was discharged.

History of interval. A week after her discharge she had a treatment of quinine bismuth iodide in the Skin Outpatient Department. After this she had pain down the leg for four days. A week after leaving the hospital she was in bed a week with cough and about an ounce of white or yellow sputum daily, with blood once or twice when she coughed very violently. Her doctor made a diagnosis of bronchitis. She lost no weight. After January 10 she had no cough and was able to do the cooking for her family, resting in bed on and off. She took digitalis under the direction of the Cardiac Clinic. January 18 she was seized with epigastric pain and vomiting. The pain was not typical of gall bladder colic, but was like the old abdominal cramps she had had except for their severity. Her physician gave morphia by mouth, which she at once vomited. She went to bed and continued to have vomiting and cramps without radiation for three days lasting for periods of five minutes to several hours. She took no more digitalis until a week before entry. Two weeks before her third admission a cardiologist saw her. He found a biphasic T_2 and T_3 and a pulse of 160. This continued, with palpitation and dyspnea on exertion. She remained in bed on fluids and toast for a week before entry. Her bowels moved only once during that time. Before her reëntry she noted some swelling of the feet. Her leukorrhea continued.

Third admission, January 24, five weeks after her second discharge.

On examination her lips were intensely cyanotic. Her heart was greatly enlarged, the left border of dullness 12 centimeters from midsternum, 6 centimeters outside the midclavicular line. The action was irregular, with many extrasystoles and an occasional run suggesting fibrillation. The sounds were of good quality. There was a systolic thrill at the apex. A systolic rumble and a diastolic blow were heard all over the precordium, loudest at the apex, transmitted to the axilla. An electrocardiogram showed normal rhythm, rate 110, slight diphasic T_2 and T_3, notched P waves in all leads. The lungs were negative except for occasional squeaks. The abdomen was full, with a flat umbilicus and a suggestion of a fluid wave. A tender liver edge was felt three fingerbreadths below the costal margin, with tenderness below it. Hyperperistalsis was audible but not visible. The spleen was not felt. The reflexes were equal and active. Fundus examination at the Eye and Ear Infirmary showed essentially normal fundi.

The amount of urine was 68 to 32 ounces. Two catheterized specimens of urine showed the specific gravity 1.018 to 1.022, the slightest possible trace to a trace of albumin, 3 to 15 leukocytes per field in both, rare fine brown granular casts once. Blood examination showed 12,500 to 9,000 leukocytes, 73 per cent polynuclears, hemoglobin 90 per cent, reds 5,300,000, smear normal.

The temperature was 100° to 97° for the first three days, afterwards 96.3° to 99°. The pulse was 42 to 123, with a deficit of 5 to 23 during the last week. The respirations were 20 to 36.

X-ray examination showed the heart apparently large. The chest was not otherwise remarkable. The colon filled readily. The cecum was somewhat large. No filling defects were noted. There was a lateral curvature of the lumbar vertebrae, probably due to anatomic variation at the sacrolumbar junction. The kidney outlines were not seen. There was no evidence of stone in the urinary tract.

The patient had much abdominal pain and nausea. The night of February 4 she vomited small amounts twice and had considerable epigastric distress and right upper quadrant tenderness. Digitalin was stopped. The night of February 7 she suddenly became unconscious and died.

Clinical Discussion

BY RICHARD C. CABOT, M.D., AND GEORGE W. HOLMES, M.D.

NOTES ON THE HISTORY

Dr. Cabot: From that history I do not think anyone could make a reasonable diagnosis. We hope that a thorough physical examination will throw light on it. These abdominal pains and so-called heart attacks, loss of weight and strength and this inability to keep the hands and feet still—none of them gives me any clear suggestions.

A tuberculin skin test is enormously important if negative. If positive it does not mean much. Most of us have positive tuberculin skin tests. A negative skin test properly done ought to have great value in excluding tuberculosis.

One musical râle is not a great deal to found a diagnosis on.

The "marked prominence in the region of the auricle" means the left auricle, does it not, Dr. Holmes?

Dr. Holmes: Yes.

Dr. Cabot: "There was no definite erosion of the ribs." They have something in mind that I have not. Why should there be definite erosion of the ribs in aortic disease? Coaptation of the aorta or high aortic stenosis gives this erosion sometimes. They are ruling that out here I suppose. We recently had a beautiful case at the Peter Bent Brigham Hospital like that, grooves running transversely across many ribs. I was entirely misled. I did not know in the least what it was. Dr Sosman, the radiologist, knew about it.

I take it that pelvic examination under ether was not much of an operation.

We should like first to make a discharge diagnosis before seeing the x-rays. They were thinking in the first place certainly of mitral endocarditis, chronic mitral endocarditis with thrill and systolic and diastolic murmurs, prominence of the conus arteriosus and the left auricle. There is not much increase in the diameter of the heart. That would go with aortic stenosis. Then there is this question of tuberculosis of the lungs which I think Dr. Holmes ought to throw some light on. My own guess is that there is nothing active; if there is any tuberculosis there it is healed. Then there is the question of pyosalpinx. They did not think it of enough importance to operate. I take it she is coming back to have that done later. So far we have a woman in rather poor condition who comes in with pelvic symptoms, possibly abdominal symptoms, for which operation is considered but not carried out, partly because of menstruation and partly because of the condition in the heart and lungs.

Dr. Holmes: The chest films are the ones you are most interested in now. This is an anteroposterior view which shows an abnormal shaped heart characteristic of mitral disease with predominating stenosis. There is a bulge here in the region of the conus and widening across the base of the heart without much increase downward in the region of the ventricle. When we rotated the patient in the oblique position we again found prominence in the upper part of the shadow in the region of the left auricle. We have very definite evidence here of marked

prominence of the left auricle. The great vessels are not dilated at all. There is no evidence of any dilatation of the aorta. Of course we can have a lesion of the aorta without dilatation. Until there is something of that sort present we are not able to find an aortic lesion by x-ray.

DR. CABOT: Will you say a word about the lungs?

DR. HOLMES: Before I brought that film over I took it to a good light and looked at the lungs carefully. I do not think there is any evidence at all of tuberculosis. The man who described it was I think in doubt himself as to whether these changes were blood vessels or thickened lymphatics or tuberculosis. These spots could be little areas of fibrosis as a result of healed tuberculosis. When we have as much of a heart lesion as we have here the blood vessels of the lungs dilate and are much more prominent than in a normal lung. That I think would account for all you see. It is a little unusual, if the patient had a definite tuberculous infection, for the hilus glands not to show some evidence of calcification.

DR. CABOT: Then we must commit ourselves to a discharge diagnosis and ask what the house diagnosis was at this point. I should say she was discharged with a diagnosis of mitral disease, stenosis and regurgitation, possibly healed tuberculosis of the lungs, nothing active, pyosalpinx, endometritis and cervicitis.

MISS PAINTER: Their diagnosis was rheumatic heart disease, endocervicitis and possible left ovarian cyst.

DR. CABOT: We seem to agree pretty well, although they did not commit themselves on a mitral lesion.

I do not think we can call that pain angina—that pain she had in the region of the third rib in front radiating towards the axilla, and the difficulty in breathing during the interval. It is the sort of pain for which we have no good name. I think it ought to be called cardiac pain in a vague sense, not angina. I dislike to make a diagnosis of angina in a person of twenty-two when there is no good reason to suppose the coronaries are involved.

With the chills her heart suddenly started to pound and stopped suddenly. Increased heart action is not I think particularly significant at the time of a chill.

I do not think we can make much of those shooting pains in the arms, hands and legs the day before entry unless there is something else mentioned to explain them.

I do not know what to make of those glands.

The heart murmurs in the second admission examination are typical of mitral stenosis.

The blood examination showed 11,300 to 13,500 leukocytes. When one has a white cell count like that, on the line between abnormal and normal, it seems to me, looking over a good many years of experience of these things, that the differential count is the thing to go by. The polynuclears are only 63 per cent. If that is so I do not think one should pay any attention to a white cell count of 11,000 or even 13,000. I should not call it leukocytosis.

I suppose the second discharge diagnosis was about the same, minus the cyst. She was discharged presumably with a diagnosis of rheumatic heart disease, mitral stenosis and regurgitation and paroxysmal tachycardia. Is that about right?

MISS PAINTER: They called it rheumatic heart disease with mitral stenosis and regurgitation, paroxysmal auricular fibrillation, bronchitis, possible ovarian cyst, and latent syphilis.

DR. CABOT: I do not see any evidence of bronchitis.

She had a biphasic T_2 and T_3 and a pulse of 160, in other words some evidence of myocardial poor transmission.

Swelling of the feet, you will remember, we have not had before.

We are never able to make a diagnosis of syphilis on the blood tests. It is not right to judge on the blood tests alone, but we certainly should expect syphilis with so many positive tests.

The urine examination shows no evidence of kidney trouble.

Have we some more films for this, Dr. Holmes?

DR. HOLMES: Yes, but they do not show anything. They are essentially normal.

DR. CABOT: I take it these x-ray examinations were made on account of the abdominal pain, not explained. So far I think we must say the pain was due to constipation.

DIFFERENTIAL DIAGNOSIS

Certainly we ought to say that mitral stenosis and its results is the main cause of death. Until just before her last entry she did not have swelling of the feet. Up to that time we had evidence of a big liver, cyanosis and not much congestion in the lungs. There is rather less pulmonary congestion than we should expect. I do not see how we can say she died of passive congestion alone. She does not give the picture of a person *in extremis* because of heart disease. At twenty-two a person ordinarily goes through much worse stages than this three or four times before he dies. I do not believe she died simply of cardiac failure. Of course a case of mitral stenosis can die without any complication at all, simply from the heart's getting so distended that it is not able to contract. Dr. Paul D. White has reported a case in which the heart filled up the whole chest from right to left—the most extraordinary picture I ever saw. There was no other cause of death found except extreme dilatation. Here there were only

*Edward F. Bland, Gerardo M. Balboni and Paul D. White. Enormous Increase of Heart Volume with Mitral Stenosis. Jour. A. M. A. 1931, Vol. 96:840.

moderately congested lungs. The legs were not extremely swollen. I think we have to look elsewhere than in the heart for the cause of death. I do not believe it is in the pelvis; there is very little to call attention to the pelvis. There is no reason to suppose it is in the abdomen above the pelvis. There is congestion of the liver there and I think nothing else. There is no good reason to suppose the cause of death is in the lungs. It was considered to be there in the early part of the discussion, but we did not have any good reason to diagnose it. It seems to me it must be some complication directly connected with the heart.

Of course in mitral stenosis it is very common to have antemortem clots forming in the left auricle, especially in the left auricular appendix. They can cause sudden death by cerebral embolism. I do not believe that can be excluded here. If there is any clot it is on the right side. Although we have not here the typical picture of pulmonary embolism, I do not believe pulmonary embolism can be excluded. What about infarcts or emboli throughout, elsewhere? There quite probably are some. I do not see any reason to suppose they caused death or made any difference. Infarcts in the lungs, spleen and kidneys are the most probable and do not do any great harm.

Could she have had acute or subacute endocarditis on top of an old process? That is possible, not probable, I think. At any rate it is not diagnosable because there is no good evidence of embolism or of any organism cultivated in the blood. We do not have as much fever or as much in the way of chills as we expect in that disease. There is no anemia, which usually develops in subacute bacterial endocarditis. So I should say that if there is any acute endocarditis it is not important. It may have been there as a terminal process. I do not believe it had anything to do with her death.

I think, then, she died of mitral stenosis and its results in passive congestion plus some embolic complication which may have been in the brain or in the lungs or possibly in one of the coronaries. That last does not seem probable, because at her age definite coronary embolism is not so common as it is in older people, the coronaries having more diameter to them, and also because we have no pain to suggest it.

A STUDENT: Were not the shooting pains probably due to emboli from the auricular appendix?

DR. CABOT: I do not believe it. If so I have got to learn something new to me about embolism. I have never known such pains as that unless there were definite vascular signs,—redness, gangrene, something else than pain.

A STUDENT: How about the abdominal pain?

DR. CABOT: That is more suggestive. One would think of mesenteric embolism there. But it seems to me with the x-ray record we have here and the lack of signs of intestinal obstruction we can exclude it.

A STUDENT: She was only twenty-two, but how about the possibility of tabetic crises?

DR. CABOT: We have first to establish the tabes. Certainly there is no evidence of tabes either in the eyes or the knee jerks. I think that probably no evidence of syphilis will be found in spite of the positive Wassermann and Hinton. It has long been the practice here not to make a diagnosis of syphilis on serology alone, no matter how positive, but to demand evidence of a primary lesion or later syphilitic lesions, because there are too many false positives.

X-RAY INTERPRETATION

The findings are quite suggestive of congenital heart disease or mitral disease.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Mitral stenosis and regurgitation.
Syphilis.
Paroxysmal tachycardia.

DR. RICHARD C. CABOT'S DIAGNOSES

Mitral stenosis.
Chronic passive congestion, general.
Embolism to the brain or the lungs or elsewhere.

ANATOMIC DIAGNOSES

1. *Primary disease.*

   Chronic and acute rheumatic heart disease; mitral regurgitation, acute endocarditis of the tricuspid valve.
   Acute pericarditis.

2. *Secondary or terminal lesions.*

   Chronic passive congestion of the liver and spleen.

3. *Historical landmarks.*

   Visceroptosis.

PATHOLOGIC DISCUSSION

DR. JOHN I. BRADLEY: The autopsy findings are disappointing in two regards. We found no explanation for the abdominal pain and no immediate cause of death.

The findings in the heart were unusual. The heart was markedly enlarged, weighing 400 grams. The enlargement was chiefly on the left side. Both auricles, however, were markedly dilated. The myocardium was thickened, the wall of the left ventricle measuring 25 millimeters. The cusps of the mitral valve were shortened and thickened. The mitral ring was dilated, measuring 14 centimeters. The cusps were not fused. The measurement of the tricuspid valve, to compare with the mitral valve,

was 11 centimeters. The measurements for the other valves were 6 for the aortic and 5 for the pulmonary—low measurements, really below the average. So the dilatation of the mitral ring is relatively very marked and striking. No evidence of stenosis of the mitral valve is noted in the autopsy protocol. Along the line of closure of the tricuspid valve there were many tiny verrucose nodules, evidence of recent acute rheumatic endocarditis. There was 250 cubic centimeters of clear fluid in the pericardium.

The lungs were distended and light gray in color. On section the surfaces were relatively dry. The liver showed the changes of chronic passive congestion. The spleen was markedly enlarged, weighing 425 grams. The only other abnormality in the abdomen was the fact that the small intestine was markedly ptotic, so that practically all of it was impacted in the pelvis. The uterus, tubes and ovaries were negative.

There was no gross or microscopic evidence of syphilis.

A STUDENT: Were there any adhesions of the small intestine?

DR. BRADLEY: No.

A STUDENT: Was there an examination of the brain?

DR. BRADLEY: No. But I might add that there was no evidence of embolic lesions elsewhere.

DR. CABOT: No thrombi in the heart?

DR. BRADLEY: No; the auricles were negative.

DR. CABOT: It is a very interesting case to me because it is only the eleventh case that I have ever seen of proved pure mitral regurgitation. I think it is a perfectly well-demonstrated case of pure regurgitation without mitral stenosis. Five years ago when I published *Facts on the Heart* I put together all the autopsies then done on the heart in this institution. Out of 1906 cases of heart disease there were 208 cases of rheumatic heart disease, just 10 of mitral regurgitation and 176 of mitral stenosis. This seems to me perfectly clearly to make an additional case of pure regurgitation. The main thing is to remember that that lesion, although it does occur, is tremendously rare, nearly as rare as pulmonary stenosis, much rarer than tricuspid disease. I suppose it was undoubtedly rheumatic?

DR. BRADLEY: Yes.

DR. CABOT: Is there any record of what the chordae tendineae showed?

DR. BRADLEY: No; they are not mentioned in the protocol.

DR. CABOT: In these cases the chordae tendineae usually have been shortened.

I think it is interesting that there is no syphilis, confirming the soundness of our general principle, though it does not prove of course that there had never been any syphilis. Yet it seems very queer if she had syphilis that she got over it with so little treatment given.

Were the lungs negative?

DR. BRADLEY: Quite negative.

A STUDENT: Does failure to find syphilis on postmortem examination prove that there might not have been a syphilitic infection there?

DR. CABOT: I should like to make it clear that that does not prove that it has not existed. But usually syphilis does not get well of itself. She had apparently very little treatment. Under those conditions it seems to be very unlikely that the patient had it and recovered from it. I have seen cases which I believed to be syphilis where a tremendous amount of treatment was given, where the patient died and no evidence of syphilis was found. This case does not seem to me parallel.

A STUDENT: What do you think about that lump in the left vault?

DR. CABOT: I think it was due to the vivid imagination of the examiner. I think you will find there is a good deal of such vividness of imagination.

DR. HOLMES: Do you think the patient might have had mitral stenosis at one time and then dilatation? That film taken several months before death shows a picture more suggestive of mitral stenosis than of regurgitation.

DR. CABOT: I do not think it ever can be changed. The valve becomes solid and rigid like a stone wall. If she had a big auricle, as she has here, I should think you would get just such a picture as you have either from stenosis or from regurgitation.

I think the strangest thing is those dry lungs. Why the lungs were dry, why there was no passive congestion, is very hard to understand I think.

CASE 17202

PROSTATIC OBSTRUCTION ASSOCIATED WITH TABES DORSALIS

UROLOGICAL DEPARTMENT

PRESENTATION OF CASE

DR. CHANNING S. SWAN: A male patient aged sixty-five, a white American taxi agent, entered the Emergency Ward on October 26 complaining of difficulty in passing urine.

The history of the present illness was that for the past year the patient had had difficulty in starting his stream and decreasing projectory. Three days before admission to the Emergency Ward he was unable to urinate although he had a desire to do so. He went to a doctor, who had difficulty in passing sounds and caused bleeding. In other words, it was a history of increasing urinary obstruction for a year with acute retention of three days' duration.

The family history is negative. The marital history is interesting in view of the fact that he had no children.

His past history showed no operations. He had however had gonorrhea forty-five years before entry and has a history of chanere forty years before entry.

Physical examination revealed a lethargic, bald-headed old man answering questions in monosyllables. He was in no distress. Rectal examination revealed the prostate flat and large. There were a few external hemorrhoids. The heart, according to the house officer's examination, showed no enlargement. The blood pressure was 170/110. The lungs were clear. The heart sounds were distant. There was a short systolic murmur at the aortic area. The abdomen was distended, with a soft rounded mass extending from the symphysis to the umbilicus, undoubtedly the bladder. The knee jerks and ankle jerks were absent. The pupils were equal. The left reacted sluggishly to light and the right did not react. Both reacted to accommodation. The Hinton and Wassermann tests were strongly positive. The impression of the house officer was that there was obstructing prostate due to enlargement of the middle lobe, possible tabes dorsalis and possible luetic aortitis.

The next day the patient had a lumbar puncture at which 15 cubic centimeters of clear colorless fluid was taken out. The initial pressure was 185, the pressure on compression of the right jugular 350, on compression of the left jugular 250. The cell count was 30 lymphocytes. The total protein was 62. The colloidal gold ran 5555544321. The non-protein nitrogen on the spinal fluid was 39 milligrams per 100 cubic centimeters of blood serum.

A nerve consultation was obtained, which read as follows: "Pupils: Right irregular. Neither reacts to light. Knee jerks and ankle jerks not obtainable with reinforcement. No marked impairment of position sense in toes." The neurologist repeated the spinal fluid findings and concluded, "The above findings, especially the Argyll-Robertson pupils, definitely suggest tabes or taboparesis."

We also had a cardiac consultation, which read as follows: "Slight cardiac enlargement and rather poor heart sounds. History of good cardiac function. No signs of congestive failure. Fair risk for surgery. Preoperative digitalization and electrocardiogram advised." The digitalization was carried out, but no electrocardiogram was done for some reason.

A plain x-ray film of the genito-urinary tract showed calculi in the prostate gland. The left kidney outline was apparently larger than the right. Neither was well shown. There was an area of density below the left sacroiliac joint not characteristic of stone. There were no other shadows suggesting calculi.

The second day after entrance a bilateral vasectomy was performed by one of the house officers.

Cystoscopy two days later revealed an enlarged prostate that had so elongated the urethra that I was barely able to get the cystoscope into the bladder. The prostate margin was very scalloped and edematous. Neither of the ureteral orifices could be definitely seen. The major projection was of the left lateral lobe; the rest of the prostate projected in collar form.

On the seventh day after vasectomy I did a perineal prostatectomy on this patient. The prostate was easily removed through the perineum in one piece. It was about the size of a plum. The pathologic examination of the prostate showed slight benign hyperplasia, chronic prostatitis and a number of small stones.

During the patient's convalescence the perineal sutures were taken out at the usual time, but the wound had to be resutured. It was slow in healing, probably because of the lues. This is the chief reason why the patient stayed in the hospital for a matter of fifty-eight days. On December 23 the following record was made in the progress notes: "The patient has been coughing for several days and raising some thin sputum. This evening at nine o'clock he had an attack of coughing and was given one-sixth of a grain of morphia, since codein had failed to relieve. At eleven o'clock he was found in a semicomatose state, with twitching of all the muscles. The eyes and the head moved from side to side. He made occasional weak response to repeated questioning. The temperature in the axilla was 104°. He was perspiring profusely. The pulse was slow, of good volume and regular except for occasional extrasystoles. Examination of the lungs showed a few crepitant râles and distant squeaks at the right base in the axillary line and diminished breath sounds at the left base posteriorly. The bladder was not distended. There was no evidence of phlebitis. The patient was lowered to a flat position in bed for about fifteen minutes." He was seen by a priest. When seen again he showed signs of auricular fibrillation. He was given 7.5 grains of digalen intravenously. At three o'clock he had another similar attack of loss of consciousness. His blood pressure could not be obtained and his pulse was about 130. The next morning the patient was entirely oriented again, though he still had convulsive twitchings at intervals. The heart was regular at about 120. In the afternoon the chest was filled with râles which obscured the heart sounds. Both lung bases were dull to the angles of the scapulae. The pulse was rapid and feeble. The patient was quite unresponsive. The twitchings continued. He remained in this condition until evening. Then he had a general convulsive seizure, lapsed into unconsciousness and died. This was on the fifty-eighth day after entry.

CLINICAL DIAGNOSES

Obstructing prostate.
Chronic myocarditis.
Stokes-Adams syndrome.
Tabes dorsalis.

ANATOMIC DIAGNOSES

(Slight benign hyperplasia of the prostate.)
Aneurysm of the thoracic aorta with rupture and hemorrhage into the posterior mediastinum.
Chronic and acute rheumatic heart disease; mitral and aortic stenosis and regurgitation.
Hypertrophy and dilatation of the heart.
Bilateral collapse of the lower lobes of the lungs.
Bronchopneumonia, slight.
Fibrinous pericarditis.
Operation wound, perineal prostatectomy.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: The case sounds like a story of benign prostatic hypertrophy with cardiac complication at the end. The real condition, I think, was completely unexpected from beginning to end. There was almost nothing in the story of the physical findings to suggest it. If Dr. Holmes had been asked to take the x-ray film a little higher I think he might have told us.

The findings of chief interest are in the heart and the aorta. The heart was slightly enlarged. It showed a few old fibrous adhesions between the cusps of the aortic valve that were typical of a healed rheumatic process, and also fresh vegetations on both the mitral and aortic valves typical of acute rheumatic endocarditis. Much more striking and extreme was the dilatation of the larger part of the thoracic aorta, beginning just at the arch and being most marked in the descending portion. Just beyond the arch there was a very large, rather diffuse aneurysm filled with a large laminated clot. At one point this showed actual rupture of the aortic wall with some escape of blood into the tissue of the posterior mediastinum.

DR. ARLIE V. BOCK: Do you examine tissues like that for spirochetes?

DR. MALLORY: We do not ordinarily. The chance of picking them up is fairly limited in our hands. Very few people have much luck in that, or perhaps I should say good enough technic. Dr. Homer Wright used to find some spirochetes in these cases, but not with regularity.

I think that one of the points that threw the cardiac consultant off was the presence of very definite neurosyphilis, as it is ordinarily taught that neuro- and vascular syphilis are very infrequently combined in a patient. In this case there is no doubt that the patient had both in a well-marked degree. The coincidence of rheumatic and luetic heart disease is also distinctly unusual and interesting.

DR. BOCK: What do you think is the usual age of death for patients with aneurysm?

DR. MALLORY: I would make a guess at about fifty.

DR. RICHARD B. KING: How do you explain the symptoms of cerebral death on the basis of leaking aneurysm?

DR. MALLORY: I do not know that we can.

DR. KING: Was the brain examined?

DR. MALLORY: No.

DR. ALLEN G. BRAILEY: Did he have a nonprotein nitrogen test?

DR. SWAN: He had two preoperatively, one 39 milligrams and one 34.

DR. BRAILEY: He did not have any during the last week, did he?

DR. SWAN: No.

DR. GEORGE W. HOLMES: There was no request for a chest examination at any time.

DR. SWAN: Dr. Sprague told me that he lost one other case like this. It was practically impossible, he said, to get all the aneurysms by physical examination alone. We ought to have a chest film on every patient with lues that comes up for prostatectomy.

DR. HOLMES: I remember one other case similar to this. I think that in any old luetic we ought to have at least a chest film before operation.

DR. FRANCIS T. HUNTER: How often do you see luetic heart disease in cases of neurosyphilis?

DR. MALLORY: Not particularly frequently, but this is the second case in four months.

DR. HUNTER: Isn't it generally said that they are mutually exclusive?

DR. MALLORY: I think that is not true.

DR. JAMES H. MEANS: Isn't it a rule sufficiently poor to be almost misleading? Shouldn't we always think of the possibility of vascular syphilis when we have neurosyphilis?

DR. MALLORY: I think we should.

DR. FULLER ALBRIGHT: What was the object of the vasectomy?

DR. SWAN: Previous to doing vasectomies most clinics ran a percentage of about 30 per cent or more of epididymitis in postoperative prostatectomy cases. We do bilateral vasectomies on the theory that infection comes down the vas and enters the epididymis in that way. Since we have done vasectomies we have had no case of epididymitis except one or two cases where there was some question that some other structure than the vas had been tied off. However, we have in the ward now two patients who developed abscesses in the scrotum which when they were drained seemed to arise from the proximal stump of the vas. One is a case that has prostatic calculi and a considerable amount of infection around the prostate. In fact there was free pus found on drainage of the prostate by the perineum. That patient also had an

abscess of about two drams in the scrotum at the region of the tied and cut off proximal end of the vas. The theory is that the pus comes down the vas as usual but does not get to the epididymis because the vas had previously been tied off. Therefore it forms a local scrotal abscess. This is a complication which was not seen before and ought to be watched for further to see if we get scrotal abscesses as often as we got epididymitis previously. I doubt very much if we do.

A PHYSICIAN: Do you think any of that patient's symptoms could be due to cord bladder?

DR. SWAN: That is important. I have seen and operated on two or three cases that had supposed cord bladder. They had definite tabes dorsalis. One man in particular had had acute retention for six years. He had been catheterized twice a day for that period of time. He had a positive colloidal gold and a positive spinal fluid and Wassermann. I assumed that the bladder symptoms were due to tabes. On cystoscopy I found intraurethral enlargement of the prostate and a small median nodule. We did a suprapubic operation. We opened the bladder wide and observed a very definite median lobe which could act as a ball valve. Therefore we enucleated the prostate, which was not large, in one piece. Following the healing of the wound the patient has voided perfectly well. He still has three ounces of residual as a result of long-standing overdistention. I think that in these cases where you find a probable obstructing prostate and also tabes you can tell the patient that he has those two conditions, that you can perhaps relieve his urinary difficulties by taking out the prostate, but that you cannot promise one hundred per cent relief because it may be dependent on the other cause, i.e., tabes. But I have seen enough cases in which the urinary difficulties were not dependent on the tabes so that I feel justified in operating.

DR. JAMES C. WHITE: Why did he have such a very high temperature?

DR. SWAN: I do not know.

A PHYSICIAN: Did he have pneumonia?

DR. MALLORY: A very slight one only, masked by the bilateral collapse.

DR. BRAILEY: Did he have mediastinitis?

DR. MALLORY: No. There was, however, a fibrinous pericarditis.

A PHYSICIAN: Did the aneurysm compress the trachea?

DR. MALLORY: That was not noted.

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THE ANNUAL MEETING OF
The Massachusetts Medical Society

ONE cannot read the announcement of the approaching meeting of the Massachusetts Medical Society without becoming aware of its unusual character.

The convocation will celebrate the one hundred and fiftieth meeting of this venerable society with appropriate exercises. The scientific program is one of unusual excellence and the Society is to be honored by the presence of Dr. Alexander Primrose, Dean of the University of Toronto, who will deliver the Shattuck Lecture* and Professor George G. Turner, a leading surgeon of The British Isles, to whom the Bigelow Medal will be awarded by the Boston Surgical Society†.

From its own roster the eminent leader in surgery of the central nervous system, Dr. Harvey Cushing‡, has been selected to deliver the annual oration.

*See page 1020.
†See page 1024.
‡See page 1023.

These three internationally known physicians will make the meetings epochal. The various sections will deal with important phases of medicine by experts in their respective fields so that the scientific features warrant the expectation of the largest attendance in the history of the Society.

In periods unoccupied by purely professional matters there will be opportunities for social contacts with professional friends. One especial attraction will be the visit to the Larz Anderson Estate in Brookline.

Every member of the Society should make an especial effort to enjoy the entertainments which have been arranged.

THE VIRUS OF THE COMMON COLD

THE economic loss entailed alone by sickness due to the common cold is stupendous. The morbidity and mortality rates of acute pulmonary infections, which are often the direct sequelae, particularly during the winter and spring months when the bacteria causing such infections are normally more common in the nose and throat, are extremely high. It is, therefore, not surprising that many attempts have been made to isolate and identify the etiologic agent of the common cold. The results in the majority of instances have been most disappointing. Certain investigations, however, reported within the past few years, seem to indicate that distinct progress has been and is being made in this important subject, particularly by Dochez and his associates[1].

Early experiments convinced these workers that the aerobic and anaerobic flora of the nasopharynx was of little, if any, significance as an etiologic factor. Work in the anaerobic group concerned chiefly the Gram-negative filter-passing microörganisms, previously investigated by Olitsky and McCartney[2]. Subsequent carefully controlled work by Dochez and his co-workers established the fact that the filtered nasopharyngeal washings from patients suffering from colds produced in apes a condition closely simulating the disease in question. These positive filtrates all yielded on culture Gram-negative filter-passing anaerobes, but, filtrates of washings from normal individuals yielded similar anaerobes yet failed to produce symptoms in apes. In later experiments, apes were successfully inoculated with filtered washings which did not contain these anaerobes. Typical colds were produced in approximately one-half of a small series of human volunteers by the filtered washings—a possibility convincingly pointed out by the earlier work of Kruse[3] and Foster[4], but denied by others. These human transmission experiments have been confirmed by Long *et al.*[5], who have placed particular emphasis on the fact that their filtrates, under proper conditions, could be freed of the ordinary filter-pass-

ing anaerobes. On the basis of these observations it has been concluded that the agent responsible for the contagious cold belongs to the group of the submicroscopic filterable viruses; and, this is further substantiated by the recent work of Dochez and his associates who have cultivated the agent in the type of medium (containing living tissue cells) which alone has been able to support the growth of such viruses.

One can only hope that these investigations will lead to some method of prophylactic treatment. Vaccination with attenuated virus, a method so successful in other virus diseases, such as, smallpox and rabies, would appear to present a definite obstacle from the fact that one attack of the common cold fails to confer any lasting degree of active immunity.

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2 Olitsky, P. K., and McCartney, J. E.: J. Exp. Med., 1923, xxxiii, 427.
3 Kruse, W.: Münch. Med. Woch., 1914, lxi, 1547.
4 Foster, J. B., Jr.: J. Amer. Med. Assn., 1916, lxvi, 1180; J. Inf. Dis., 1917, xxi, 451.
5 Long, P. H., *et al.*: Proc. Soc. Exp. Biol. and Med., 1930, xxviii, 53; J. Exp. Med., 1931, liii, 447.

THE ASCHHEIM-ZONDEK TEST

THE establishment by Aschheim and Zondek[1] that the urine of pregnant women when injected into immature female mice causes maturation of the immature ovarian follicles with subsequent hemorrhage and corpora lutea formation within one hundred hours of the time of injection has given a valuable test for pregnancy. The hormone producing this reaction they have named Prolan A. The reaction is positive in ninety-eight per cent. of all pregnancies tested, becoming positive as early as the third day after conception and remaining positive a week after delivery.

If the test stopped here it would be all that could be desired. Unfortunately, as pointed out by Zondek[2], he obtained eighty-two per cent. positive reactions from fifty-five cases of genital carcinomas in women. Therefore the reaction can be regarded as positive evidence of pregnancy only after the existence of carcinoma in the patient has been ruled out. Scattered reports have called attention to the existence of positive Aschheim-Zondek tests in cases of chorio-epithelioma and, of particular interest, in cases of chorio-epithelioma in males.

A still further advance has been reported by Ferguson[3]. On testing twelve cases of teratoma of the testis, positive reactions were obtained in eight, all of whom showed clinical evidence of disease. Of the four known cases with no clinical evidence of disease, three gave negative reactions, and the fourth, a eunuch, a positive reaction. The test was negative in all of twenty-four cases with benign lesions of the testis, and was negative in fifteen males with normal testes, twelve of whom were suffering from malignant disease. This observation of Ferguson gives a most valuable lead in the diagnosis of testicular tumors.

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1 Aschheim, S. and Zondek, B.: Klin. Wchnschr., 1928, 7, 1404.
2 Zondek, B.: Klin. Wchnschr., 1930, 9, 1207.
3 Ferguson, R. S.: Am. J. Cancer, 1931, 15, 835.

THE MARCH EXAMINATION OF THE MASSACHUSETTS BOARD OF REGISTRATION IN MEDICINE

THE report of the Board of Registration in Medicine setting forth the results of the March examination presents certain matters of interest as shown on page 1064 of this issue.

The Class C medical schools are evidently unable to send any considerable proportion of graduates to the examinations who are able to meet the very modest requirements of Massachusetts, which would indicate fitness to practice in this state.

It is generally known that the Middlesex College of Medicine and Surgery will not permit the officers of the Council on Medical Education to make any investigation of its curriculum. The Massachusetts College of Osteopathy also takes this same position and both of these institutions have been able to secure recognition for the graduates of a very small proportion of those who applied.

The Boston College of Physicians and Surgeons did not succeed in securing recognition for either of its applicants.

This is another strong argument for revision of the laws relating to the registration of physicians in Massachusetts because only a very small proportion of graduates of Class C schools can meet the present requirements and especially since these schools are not recognized by the great majority of states in the union, they should be obliged to improve the quality of medical instruction before receiving recognition by Massachusetts.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

HOMANS, JOHN. B.A., M.D. Harvard University Medical School 1903. F.A.C.S. Surgeon to the Peter Bent Brigham Hospital. Assistant Professor of Surgery, Harvard Medical School. His subject is: "The Operative Treatment of Phlegmasia Alba Dolens." Page 1025. Address: 721 Huntington Avenue, Boston.

MULVIHILL, DANIEL A. A.B., M.D. Yale University School of Medicine, 1928. Assistant in Surgery (Research), Long Island Medical College of Medicine. Assistant Resident Surgeon,

Long Island College Hospital. Address: Long Island College Hospital, Brooklyn, New York. Associated with him is:

HARVEY, SAMUEL C. Ph.B., M.D. Yale University School of Medicine 1911. F.A.C.S. Surgeon-in-Chief, New Haven Hospital and New Haven Dispensary. Professor of Surgery, Yale University School of Medicine. Address: Yale University School of Medicine, New Haven, Conn. Their subject is: "The Mechanism of the Development of Collateral Circulation." Page 1032.

HEPBURN, JAMES J. A.B., M.D. Harvard University Medical School 1909. F.A.C.S. Visiting Surgeon, Boston City Hospital. Consulting Surgeon, Norwood Hospital. Professor of Clinical Surgery, Tufts College Medical School. His subject is: "Treatment of Postoperative Ventral Hernia." Page 1035. Address: 23 Bay State Road, Boston.

ZACKS, DAVID. M.D. Tufts College Medical School 1920. Supervisor of Clinics, Massachusetts State Department of Public Health. His subject is: "What We Have Learned from the Ten Year Program in Massachusetts." Page 1037. Address: State House, Boston.

TUTTLE, GEORGE H. A.B., M.D. Harvard University Medical School 1891. Assistant Surgeon, U. S. A. Spanish War. Assistant in Medicine, Massachusetts General Hospital. His subject is: "Hyperinsulinism." Page 1039. Address: South Acton, Mass.

FROTHINGHAM, CHANNING. A.B., M.D. Harvard University Medical School 1906. Physician to Peter Bent Brigham Hospital. Associate Clinical Professor in Medicine, Harvard University Medical School. His subject is: "What the Committee on the Costs of Medical Care Is Trying to Do." Page 1041. Address: 721 Huntington Avenue, Boston.

PAINTER, CHARLES F. A.B., M.D. Harvard University Medical School 1894. His subject is: "The Medical Museum: Its Rôle in the Teaching of Medical History." Page 1047. Address: 520 Commonwealth Avenue, Boston.

MISCELLANY

A BROADCASTING MESSAGE BY THE STATE DEPARTMENT OF PUBLIC HEALTH

HEART DISEASE IN CHILDREN*

BY DR. P. W. EMERSON

Children are either born with heart disease or have it thrust upon them, that is, the heart is disabled either because it has been formed imperfectly or because it has been damaged by inflammation.

No one can tell directly without methods of examination how badly a heart is deformed, how complicated the defect may be. The amount of blueness of the lips, cheeks, fingers and toes of a baby or child, gives us a clue as to the severity of the heart defect, and also as to the expectation of life. The more blueness the less chance of long life.

Children who are born with defects in the heart can be helped by preventing them from catching cold, pneumonia or whooping cough. These diseases cause congestion in the lungs and put more strain on the heart. These children must not overexert. They are also more liable than normal children to acquire inflammation of the heart in addition to the trouble they already have.

Now as to acquired heart disease—this is due to an infection of the heart with bacteria, germs. They come into the blood and then go to the heart. A new contact is made there, inflammation is set up. The delicate lining, the valves, the muscle wall and the covering sac are all inflamed at the same time, sometimes one more than another. The fight goes on for weeks and months. The germs are being conquered but the marks are being left. The valves become glued together and distorted, so they do not close perfectly. This means that the blood leaks back. The valves are no longer tight. The fibres of the muscle wall are being weakened and stretched and the wall instead of contracting firmly gives way. The heart can no longer get a good squeezing grip on the blood. The covering sac becomes distended with fluid or becomes glued to the muscle wall. Either way it hinders the heart. The heart is laboring and some time during the fight it begins to enlarge to make up for the leakage of the valves, the stretching of the wall and the hindrance of the covering sac.

After the inflammation has quieted down and healing is completed, the heart does the best it can with what it has left. It continues to enlarge until it can bear any burden that is placed upon it. By becoming a bigger pump, by forcing more blood through at each contraction, all the mechanical disadvantages are overcome. If in the future the heart is again inflamed, it may win but each new fight leaves it weaker. Let us say the heart does not win. It pumps so weakly that the blood backs up in the body, the abdomen gets large and tender, the legs and arms swell, the breathing becomes short, and the stomach is unable to retain food. The pump just wears itself out.

The germ which is the commonest offender as regards acquired heart disease in children is that which causes rheumatic fever. We do not know much about the germ itself but we know a good many facts about the disease it causes. We know that the disease comes in children, especially between the ages of 4 and 11, it attacks the poor, who have insufficient food and clothing and who live in cold damp houses. It comes more among girls than boys. It comes most often in the spring. It tends to recur. It is practically unknown in hot climates. It is insidious, stubborn, and shifting. At one season it will appear as a sore throat and pains, at another as joint swelling. At another as St. Vitus dance, at another as nosebleeds and tiny lumps on knuckles, ankles, elbows and knees. We know that all these

*Broadcast March 25, 1931 by Dr. Hyman Green.

signs are due to the same cause, which is infection with the germ of rheumatic fever. It is timely to talk about this subject in the spring of the year, the season of its greatest incidence.

The pains in the muscles mean that they are inflamed. These are the pains of rheumatic infection and have nothing to do with growing, hence, growing pains mean rheumatic fever and nothing else. Swelling and pains in the fingers or ankles or knees mean that the joints are inflamed. The nervousness means that the part of the brain that has to do with orderly movements is inflamed. The nosebleeds mean that the blood vessels in the nose are inflamed and allow the blood to leak out. The tiny lumps on the knees and elbows mean that the sheaths of the tendons are inflamed. All these signs and symptoms spell danger to the heart.

Parents of children with heart trouble can bear up, no matter what kind of trouble it is, provided there is some hope that the children will get well. When asked, "Is my child better?" it is difficult to answer the question truthfully with a simple, yes or no. There are several qualifications, always. In the first place, the child is seldom better in the sense that he has completely recovered and is as good as he ever was. It is like driving a nail into a piece of wood. You can take the nail out, but the hole will always be there. In the second place, the child is seldom better in the sense that he is through with the disease and will never have it again. It may come back to him any time, out of a clear sky. In the third place, the child is seldom better in the sense that he is recovering quickly. It puzzles mothers and fathers that a child can be sick with the same inflammation for so long a time. A parent has deep in his mind the question, "Will my child grow up?" This is a difficult question to which there is no single answer. The experts have different opinions. The doctor who can pick up faint signs of rheumatic infection and watches the child grow up without getting inflammation of the heart is optimistic. He says there are many children like this. That is, not every case with pains, for example, goes on to heart disease. The doctor who sees children have an attack of inflammation of the heart finishing school life and attaining the age of fifty, is optimistic. That is, not every child who has one attack must get others.

What can we do about it?

First early and prolonged rest in bed. Naturally taking out diseased tonsils, removing diseased teeth, providing fresh air, good food, proper clothing, protection against wet and cold, will help to prevent a child from trouble, but if it comes we must depend upon rest. The time to put these children to bed is when they begin to complain of pains, when they lose their appetites and get pale, when they tire easily and are irritable.

How long do we keep the child in bed? Until the child has begun to gain in weight, the temperature has been normal for two weeks provided that the heart is beating at a normal rate and the sounds are good. We get the child up by degrees but, any time, if the temperature rises or the weight falls the child must go back to bed, because the inflammation has not quite healed. Sometimes it takes a good many months.

Now it is easy to say, put the children to bed. Where are you going to do it? Not at home. The mother has a hundred things to do and if she turns her back one minute, her child is out of bed and into the street. Her idea of the nature of the disease is a hazy one; and she cannot hold out long against the restlessness of the child or the comments of her friends and neighbors.

The hospital is the best place for the prolonged rest; but as hospitals are for acute cases, we need institutions provided by the State where children could be sent early, kept for a long time and given schooling.

Surely a disease which kills so many children before their time or makes cripples of them or robs them of their happiness deserves the united efforts of all of us to stamp it out. These children need more rest and a better education. Let's help them.

MASSACHUSETTS BOARD OF REGISTRATION IN MEDICINE

REPORT OF MARCH 10, 11, 12, 1931 EXAMINATIONS

Medical Schools From Which Applicants Graduated	Number Registered	Number Rejected
Middlesex College of Medicine & Surgery	2	16
Philadelphia College of Osteopathy	1	3
Massachusetts College of Osteopathy	1	11
Kansas City University of Phys. & Surgeons		8
Laval University	1	
Kirksville College of Osteopathy & Surgery		2
Missouri College of Medicine and Science		1
Boston College of Physicians and Surgeons		2
Chicago College of Osteopathy		1
Hahnemann Medical College, Philadelphia	1	1
Tufts College Medical School	5	1
Boston University School of Medicine	4	
University of Montreal		2
McGill University		1
University of Pennsylvania	2	
Harvard Medical School	4	
University of Oporto	1	
University of Tennessee	1	
Vanderbilt University	1	
Royal College of Physicians and Surgeons, Ireland	1	
Toronto University	1	
	26	49

SUCCESSFUL APPLICANTS REGISTERED IN MARCH, 1931

Alexandrov, Vitaly John, 19 Cottage Avenue, West Roxbury, Mass.
Allen, Anna Margaret, Danvers State Hospital, Hathorne, Mass.
Bateman, William Augustine, 528 Andover Street, Lawrence, Mass.
Brice, James Walter, 214 North Drake Street, Titusville, Pa.
Clark, James Arad, 104 Swan Street, Everett, Mass.
de Aguirar, Alcinda Pereira, Rome State School, Rome, New York.
Flower, Bardwell Hastings, Box 57, Worcester, Mass.
Forziati, Alphonse Lodovic, General Hospital, Fall River, Mass.
Gitter, Joseph, 17 Holden Street, Malden, Mass.
Guardo, James Leslie, 5 Alwin Road, Roslindale, Mass.
Hoffman, Daniel Clare, Boston City Hospital, Boston, Mass.
Jacobson, Bernard Maxwell, 330 Brookline Avenue, Boston, Mass.
King, Connie Holt, Norfolk County Hospital, South Braintree, Mass.
Lee, Walter Wilfrid, 26 Kresge Bldg., Pittsfield, Mass.
Lilyestrom, Sanfrey Mathew, Worcester City Hospital, Worcester, Mass.
Marien, Joseph Ernest, Burbank Hospital, Fitchburg, Mass.
Murray, John Milne, 14 Winthrop Street, Winchester, Mass.
O'Neill, Hugh, P. O. Box 50, Hathorne, Mass.
Peggs, Donald Stoodley, Marshfield Hills, Mass.
Radcliffe, Frederick Roberts, Maine Gen. Hospital, Portland, Me.
Rosenberg, Henry Norman, 27 Allen Street, Boston, Mass.
Roy, Louis Francois, 795 Middle Street, Fall River, Mass.
Sagnall, Barnard, 67 Franklin Avenue, Revere, Mass.
Schwartz, Harry, Metropolitan Hospital, New York City, N. Y.
Vartanian, Nevard Shirley, Norwich State Hospital, Norwich, Conn.
Vieira, Edwin, 129 Allen Street, New Bedford, Mass.

COMMONWEALTH OF MASSACHUSETTS
BOARD OF REGISTRATION IN MEDICINE

APPLICANTS REGISTERED BY ENDORSEMENT OF NATIONAL BOARD SINCE OUR LAST REPORT

Bartlett, Marshall Kinne, Free Hospital for Women, Brookline, Mass.
Blanchard, Walter Orville, New Haven Hospital, New Haven, Conn.
Brigham, Robert Bennett, 210 Elm Street, Northampton, Mass.
Butler, Alice Mary, 1a Acorn Street, Boston, Mass.
Desmond, Leo Raymond, 131 E. Cottage Street, Dorchester, Mass.
Dodson, Leslie Chester, 490 Commonwealth Avenue, Boston, Mass.
Forkner, Claude Ellis, 1 Tyler Road, Belmont, Mass.
Kaliris, Constance, Belmont Hospital, Worcester, Mass.
Monks, John Peabody, 51 Commonwealth Avenue, Boston, Mass.

STERILIZATION OF THE INSANE AND CRIMINALS

Governor Murray of Oklahoma has approved House bill 64 which provides for the sterilization of insane and third term criminals.

This treatment is applicable to males under sixty-seven years of age and to women under forty-seven.

The State Board of Affairs has authority to regulate this procedure after medical boards have passed on cases within the categories cited above.

The law provides for appeals to courts.

This measure is regarded as protection for society and not punitive. The justification of sentences covering the restraint of criminals has been in some instances the educational effect as a deterrent of crime and not legalized vengeance. One may raise the question, would not castration of the criminal who has been convicted of rape have a deterring effect on such human brutes and be a fitting punishment?

THE MILBANK MEMORIAL FUND IS STUDYING THE ECONOMICS OF MEDICAL SERVICE IN EUROPE

In addition to an active interest in the problems of medical service to the people in this country the Milbank Memorial Fund is engaged in a study of conditions relating thereto in European countries.

Studies thus far by various organizations and especially by the Committee on the Costs of Medical Care have convinced all engaged in these investigations of the breadth of the perplexing problems relating to the efficient application of policies which must in time be evolved if real progress is to be made in providing satisfactory service to all the people.

The Milbank Fund has placed Sir Arthur Newsholme in charge of its work in Europe. His report will appear in four volumes under the title of "The Prevention and Treatment of Disease" the first of which has been published covering conditions relating to medical service in Scandinavian countries, Germany, Austria and Switzerland.

The indications thus far seem to indicate marked similarity with the medical problems facing the United States.

In all of the countries studied thus far by Newsholme, sickness insurance is provided and according to the author has distributed the burden of illness over the masses and relieved the individual of one of the depressing effects of sickness.

Germany and Austria, the report states, there is dissatisfaction with the system but in Norway and Sweden the plan is acceptable to the medical profession and the people.

Whether more general sickness insurance will work well in this country, and especially compulsory adoption of the system, will depend to some extent, probably, on the elimination of some very apparent defects which have been noticed in the adjustment of claims.

There are indications of a likelihood of this plan coming to more general consideration. We predict that companies selling this service will have to be subject to more rigid governmental control than appears to be the case at present if it becomes generally endorsed.

COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1930 AND SEVEN YEAR AVERAGE

MONTH ENDING MAY 2, 1931

	1931					1930			
Diseases	Week ending Apr. 11	Week ending Apr. 18	Week ending Apr. 25	Week ending May 2	Average cases reported for week corresponding to May 2 for past seven years	Week ending Apr. 12	Week ending Apr. 19	Week ending Apr. 26	Week ending May 3
Anthrax	—	—	—	—	—	—	—	2	—
Cerebrospinal Meningitis	—	2	2	1	1	2	2	5	4
Chicken pox	90	85	96	88	68	97	118	109	83
Conjunctivitis Inf.	2	6	16	1	1	11	—	—	—
Diphtheria	8	7	11	7	21	11	16	17	6
Dysentery Amoebic	—	—	—	—	—	—	—	1	—
Encephalitis Epid.	—	—	—	—	—	—	—	—	1
German Measles	7	9	16	6	36	50	59	69	64
Influenza	5	5	7	3	17	5	10	5	1
Malaria	—	—	—	—	—	—	—	1	—
Measles	795	671	754	466	272	20	26	76	43
Mumps	46	81	60	81	58	30	42	42	47
Pneumonia (Broncho)*	46	32	50	20	29	39	38	28	23
Pneumonia (Lobar)	50	66	44	39	49	37	52	58	31
Scarlet Fever	55	41	58	59	91	101	92	80	65
Septic Sore Throat	5	1	3	8	1	3	4	1	1
Smallpox	—	—	—	—	1	—	—	—	—
Trichinosis	—	—	1	1	—	—	—	1	—
Tuberculosis (Pul.)	24	24	28	47	35	34	50	30	30
Tuberculosis (O. F.)	3	3	3	2	5	6	4	6	3
Typhoid Fever	1	—	2	1	2	1	1	1	2
Undulant Fever†	—	—	1	2	—	—	1	—	—
Whooping Cough	51	61	72	35	65	30	39	38	44
Gonorrhea	24	18	43	23	21	20	18	26	39
Syphilis	21	38	62	37	25	34	23	35	46

*Made reportable January 1, 1925.
†Made reportable August 14, 1928.

Remarks: No cases of Asiatic cholera, glanders, plague and yellow fever during the past seven years.

AMERICAN MEDICAL GOLFING ASSOCIATION TOURNAMENT

PHILADELPHIA, JUNE 8, 1931

The Seventeenth Annual Tournament of the American Medical Golfing Association will be held in Philadelphia, Monday, June 8, at the Aronimink Golf Club instead of the Huntington Valley Country Club, as announced in the Brochure of the Association which was recently mailed to members. The Aronimink Golf Club is modern; the course is in splendid condition and is interesting and sporty. The Local Committee is doing everything possible to make the tournament a great success. The Philadelphia men composing the Local Committee on Arrangements are Dr. John W. Croskey, Chairman; Dr. Willis F. Manges, Dr. Fred H. Leavitt, Dr. Frank J. Kelly, and Dr. Damon B. Pfeiffer.

Membership in the American Medical Golfing Association is open to any male Fellow of the Ameri

can Medical Association in good standing. It is hoped that many of the medical golfers throughout this State will join the Association this year and take part in the Philadelphia tournament. There will be many attractive and valuable prizes awarded at the Annual Dinner, to be held on the evening of the day of the tournament at the Club House. For any additional information, communicate with any member of the Local Committee, or with the Executive Office, 1124 Maccabees Building, Detroit, Michigan.

CORRESPONDENCE

THE BROADCASTING SERIES APPEARING IN THIS *JOURNAL* HAS BEEN PREPARED BY A COMMITTEE OF THE MASSACHUSETTS MEDICAL SOCIETY

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

May 6, 1931.

Editor, *New England Journal of Medicine:*

In your recent editorial entitled "A Broadcasting Series" you called attention to the papers broadcast weekly on various health matters but you omitted to point out that these papers are prepared by the Committee on Public Education of the Massachusetts Medical Society and furnished to us. We in turn make all the arrangements for broadcasting during the time which WBZ so generously gives us. I feel that this coöperative relationship with the Committee of the State Society is very significant in addition to representing an enormous amount of work on the part of many individuals and we are sorry that it was omitted in your otherwise admirable editorial.

Yours truly,

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

OBITUARY

WILLIAM NORTON BULLARD, M.D.

Dr. William N. Bullard died suddenly and painlessly at the Ritz-Carlton Hotel in Boston, where he was spending a few days, on April 13, 1931 at the age of 77.

He was born August 23, 1853, in Newport, Rhode Island. His father was William Story Bullard and his mother Louisa Norton (Bullard). He was educated in various Boston schools graduating finally from the Hopkinson School. He was prepared to enter college at the age of 17 but an attack of typhoid fever necessitated a postponement for a year which was spent in European travel. He then entered Harvard College in the class of 1875 and was graduated from the Harvard Medical School in 1880. He spent two years as house pupil at the Massachusetts General Hospital which was followed by a year in Europe with a continuance of his studies in Vienna, the usual custom at that time. Shortly after his return to Boston, he accepted the position of Physician to the Boston Dispensary, which he held for many years, and began the practice of medicine with special reference to neurology.

In 1886 he became Assistant to the Physician for Diseases of the Nervous System at the Boston City Hospital and in 1889 was appointed physician in the same department. For many years thereafter, associated with the late Doctors Morton Prince and Philip C. Knapp, he did his part toward building up interest in disorders of the nervous system. He was keenly disappointed in the abolition of the so-called Nervous and Renal Service at this hospital which he with others had hoped might develop into a department with an adequate number of beds devoted to the care of neurological cases. He resigned his service November 21, 1906.

During this period he was also connected with the Carney Hospital in South Boston. From 1888 to 1913 he served as Neurologist of the Children's Hospital, and resigned finally because of impaired health. During this 25 years he was unsparing in his service and, no doubt, developed the special interest which he always maintained in the problems which children presented, particularly in relation to feeblemindedness and epilepsy.

He was one of the founders and later chairman of the Trustees of the State Hospital for Epileptics at Palmer, an institution which from small beginnings has grown to be one of the greatest importance for the study and care of epileptics, the necessity for which was shown by its rapid increase in size and the demands made upon it for the treatment of this large class of defectives.

Of his many far-reaching benefactions, the establishment of a Professorship of Neuropathology at the Harvard Medical School in 1909 is outstanding, the first incumbent of which was the late Dr. Elmer E. Southard. It was a wise provision that the terms under which this professorship was established were of so liberal a character, that its functions cover the whole field of neurology and psychiatry, a recognition of the fact that a delimitation of scope is impossible in the changing state of knowledge.

Dr. Bullard retired from active practice in 1902 but continued for some years thereafter in his hospital work and up to the time of his death never lost interest in medical matters and the furtherance of beneficent medical activities.

Always a collector of books and with means to gratify his taste, he first began to collect 16th and 17th century classical texts, and gradually began to buy incunabula. Finally about four years ago he limited his collecting to books published before the beginning of the 15th century. In the spring of 1927 he loaned the Boston Medical Library his collection of medical incunabula numbering 100 volumes, suitable accommodation having been provided for them by his generosity. During the succeeding years he continued actively in adding to the collection until it numbered 217 titles, many of them

outstanding classics of the middle ages. Fifteen other incunabula had been given by him outright to the Library at various times bringing the entire number of the collection up to 232 titles. These books have been catalogued by Mr. James F. Ballard of the Medical Library. Dr. Bullard's interest also extended to first editions of medical books printed in the 15th century and others on collateral subjects. In 1928 he presented to the Library his fine collection of 16th and 17th century books numbering about 500 volumes with many important classical texts, also rare items on Witchcraft and other topics. In his will Dr. Bullard has given to the Library his entire collection of medical incunabula most of which were originally loaned as well as all his other medical books and has provided for the future development of his collections through a bequest of $50,000 to be used for the purchase of books and manuscripts prior to 1700. With incunabula otherwise acquired The Boston Medical Library thereby becomes the repository of the third largest collection of medical incunabula in the United States and Canada. Although the collection of books was perhaps his most absorbing interest, his devotion to botany was hardly less so. Both in this country and in Europe he spent much time in the field observation of wild flowers and plants and derived therefrom a peculiar pleasure and satisfaction.

During the period of his medical practice he published many articles on neurological subjects the more important of which related to epilepsy, idiocy and imbecility. His investigations, however, included many other papers on functional and organic neurology and the surgery of the central nervous system, the latter in collaboration with the late Dr. H. L. Burrell. Notable contributions made in 1886-87 were on the subject of chronic tea poisoning in which he attempted, with much success, to show that a certain symptom-complex might be directly traced to overindulgence in tea. These papers were based on a study of nearly 200 cases, carefully observed.

Among the more important of his society connections were membership in the National Society for the Study of the Feebleminded, National Association for the Care and Study of Epilepsy, of both of which he was at one time President and the American Neurological Association of which he was President in 1912 on the occasion of its meeting in Boston. Unfortunately he was not able to preside at this meeting owing to a serious surgical affection which would have cost him his life had it not been for a brilliant operation at the hands of Dr. M. H. Richardson. He was a member also of many local societies to which he always contributed his share.

In his later years his somewhat failing health prevented his participation in active affairs, no doubt much more than he would have wished. For approximately six years preceding his death he was afflicted with a serious disturbance of the heart which was ultimately fatal. His later years were furthermore clouded by failing eyesight so that toward the end he was practically blind. In spite of all these physical handicaps he maintained his interest in life and in his special avocations and still found opportunity to continue the tasks which he had set himself. He was an omnivorous reader and in spite of his failing eyesight his determination enabled him to derive pleasure in this resource nearly to the end. For the greater part of his life he was closely identified with Boston but for some time past he had made his residence at Lenox, Mass., traveling much abroad and spending his summers at North Haven, Maine.

As a man Dr. Bullard was genial, sympathetic and always ready to be of help to those who sought his advice and counsel. As a diagnostician he was skilful and possessed of peculiarly sound judgment. His whole life was characterized by extreme modesty with a corresponding desire to assist younger men toward the accomplishment of their ambitions. The establishment of a chair of Neuropathology demonstrated his recognition of the need of encouraging investigation in this important field which at that time was little recognized as a fundamental discipline. The liberal endowment of this chair has made possible a noteworthy development of neuropathology in its widest sense in this community, and in the broader sphere of American medicine in general. It was doubtless, therefore, a great satisfaction to him that the Trustees of the Boston City Hospital approved the recommendation of Dr. Stanley Cobb, second Bullard Professor of Neuropathology that the ninth and tenth floors of the new medical building at that hospital be named the Bullard Neurological Laboratories, which he lived to see completed and in active operation.

Although for many years inactive in a purely professional way, neurology has lost in his death one of its earlier and most active pioneers who did much to bring it to the position in which it now stands. In 1900 Dr. Bullard married Miss Mary R. Reynolds, a sister of Dr. Edward Reynolds, who survives him. They had no children.

E. W. T.

NEWS ITEMS

PHYSICIANS ELECT DR. T. B. FUTCHER—Atlantic City, N. J., May 6—Dr. T. B. Futcher of Baltimore was elected president of the Association of American Physicians at the annual convention at the Hotel Traymore today. Other officers elected were Dr. G. O. Robinson, New York, vice president; Dr. J. H. Means, Boston, secretary; Dr. E. H. Funk, Philadelphia, recorder; Dr. G. Blumer, New Haven, treasurer, and Dr. G. R. Minot, Boston, councilor.—*Special to The New York Times.*

TUFTS MEDICAL NOTES

TUFTS MEDICAL DINNER

On Monday evening, May 4, 1931, the annual Tufts Medical Dinner was held at the University Club.

The dinner was sponsored by the student body,

under the supervision of James Nigrelli, class of 1932, who was Chairman of the event.

Dr. Thomas J. O'Brien was toastmaster and he filled that position in an ideal manner. Dr. John A. Cousens, President of Tufts College, Dr. George Keenan, President of the Alumni Association, and the heads of each department, were guests of the student body, while many other faculty members and alumni were also present.

Following the very interesting remarks by President Cousens and President Keenan, short speeches were made by the following:—Dr. Horace Binney, Dr. Cadis Phipps, Dr. Alonzo K. Paine, Dr. Louis E. Phaneuf, Dr. William P. Boardman, Dr. Elmer W. Barron, Dr. F. W. Thyng and Dr. Benjamin Spector.

The entertainment was furnished by Dr. David D. Berlin and Dr. N. J. Simmons, who rendered a duet on the piano. Robert T. Phillips, class of 1932, recited a parody on the poem, Dangerous Dan McGrew. The entertainment was very well received.

On Wednesday afternoon, May 6, 1931, the third year class of Tufts Medical School, held a Field Day at the Hood Dairy Farm in Beverly.

After a tour of inspection throughout the very modern and efficient plant, the activities of the day began. The feature sport of the afternoon was a baseball game between the married men and the single men. The benedicts, having two former big league players, won easily with a score of eighteen to two. Other sport events included boxing matches, shot-putting, broad-jumping, and "touch" football.

Throughout the afternoon, ice cream and milk were served plentifully.

The affair was in charge of William J. Crooks and Edward T. Abrahms.

NOTICE

REMOVAL

Dr. E. A. Codman announces the removal of his office from 227 Beacon Street, to the Hotel Lincolnshire, 20 Charles Street, Boston, Mass.

REPORTS AND NOTICES OF MEETINGS

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

The Annual Meeting of the Middlesex South District Medical Society was held April 29, 1931, at the Commander Hotel, Cambridge.

The following officers were elected:

President: Fritz Walter Gay, Malden.

Vice-President: Allen H. Blake, Somerville.

Secretary: Alexander A. Levi, Cambridge.

Treasurer: Edward Mellus, Newton.

Commissioner of Trials: Edwin P. Stickney, Arlington.

Member of the Nominating Committee of the Massachusetts Medical Society: Edmund H. Stevens, Cambridge. Alternate, Thomas M. Durell, Somerville.

Censors: Norman M. Hunter, Hudson; Fred R. Jouett, Cambridge; John McLean, Somerville; Dwight O'Hara, Waltham; Henry F. Keever, Newton.

Orator: Paul Gustafson, Cambridge.

Councillors:

District No. 1— Edmund H. Stevens, James W. Sever, Hollis L. Seavey, John P. Nelligan, W. Stewart Whittemore, C. M. Hutchinson, David C. Dow.

District No. 2—Clarence H. Staples, Henry J. Keaney, Ralph W. McAllester, Harry H. Flagg.

District No. 3—Frederick G. Smith, Charles E. Mongan, Allen H. Blake, Walter T. Burke, Thomas M. Durell, Charles F. K. Bean.

District No. 4—Harold R. Webb, Fred A. Higginbotham, Henry Joel Wolcott, Charles F. Atwood, Conrad Bell, H. Quimby Gallupe.

District No. 5—Francis G. Curtis, Lewis H. Jack, Irving L. Fisher, Walter H. Crosby, Hartley W. Thayer, E. D. Leonard, Leroy A. Schall.

District No. 6 — Dana F. Cummings, M. J. Shaughnessey.

District No. 7—Josephine D. Kable, Norman M. Hunter.

Auditors: Arthur N. Makechnie, Alvah C. Cummings, William McDonald.

Nominating Committee: C. M. Hutchinson, E. F. Sewall, George L. West, Lee W. McGuire, Joseph C. Merriam, Sidney C. Dalrymple.

The annual oration, "Some Changing Aspects of Surgery," was delivered by Dr. Irving J. Walker and will be published in an early issue of the *Journal*.

ALEXANDER A. LEVI, *Secretary*.

WILLIAM HARVEY SOCIETY

On Thursday evening, May 7, 1931, Rabbi Harry Levi, of Boston, addressed a large audience at the Beth Israel Hospital Auditorium on the subject "Education and Its Relationship to Life." Dr. David Berlin, of the Tufts Medical Faculty, was chairman.

Preceding Rabbi Levi's address, Robert T. Phillips, president of the William Harvey Society, presented a gift formally to Dr. Charles Wilinsky, Superintendent of the Beth Israel Hospital. The gift was a large, valuable print of William Harvey which is over two hundred years old.

Mr. Phillips told of the past work and activities of the William Harvey Society, and of its future hopes and plans. As a representative of the students of Tufts Medical School he thanked Dr. Wilinsky and the Beth Israel Hospital for their generosity and interest in allowing the William Harvey Lectures to be held in the auditorium.

Dr. Wilinsky responded very fittingly in the reception of the gift and highly endorsed the work of the William Harvey Society of Tufts Medical School.

Rabbi Levi's lecture was the final one of a series of eight lectures of the year 1930-1931. The William Harvey Society enjoyed a very successful program

in its first year of activity, and wishes to openly thank all those who through their efforts and timely aid have made possible the great success of this undertaking. In particular, The William Harvey Society wishes to thank the *New England Journal of Medicine* for its coöperation and desire to aid the Society through announcements and reports of the lectures.

THE MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH

The Quarterly Meeting of the Massachusetts Association of Boards of Health was held at the University Club, Boston, April 29, 1931. After luncheon the meeting was called to order by Dr. Trowbridge of Worcester. The subject discussed was Rabies and Dog Bite Cases.

Dr. Millard Knowlton, Director of the Preventable Disease Bureau of Connecticut, was the first speaker who explained the methods of handling the disease in Connecticut. He reported that from 1915 to 1931 there had been four human cases and that examination of dogs' heads had recorded 563 positives, that in Massachusetts during this same period there had been twenty-nine human cases and 3024 positive dogs' heads and in Rhode Island there had been six human cases and 362 positive dogs' heads. He submitted a copy of the laws relating to dogs in Connecticut.

Dr. G. W. Anderson of the Communicable Disease Division of the Massachusetts Department of Public Health explained the details of the methods of procedure with reported cases of rabies in dogs and the efforts made to have all persons bitten by rabid dogs treated by the antirabic serum. In cases of dog bites about the head by rabid animals, he recommended the twenty-one day and in other cases the fourteen-day treatment emphasizing the vital importance of the earliest possible application of the specific treatment following cauterization of all such wounds with fuming nitric acid.

Dr. W. A. Hinton, Chief of the State Wassermann Laboratory, explained in minute detail the technic of the examination of the brains of suspected dogs which will furnish the almost certain evidence of rabies within a few hours and thereby give time for the immunization of the infected person. He made it clear that although a technician trained in this work could be practically sure of recognizing the presence of the Negri bodies, skilled laboratory workers without experience in this field cannot be expected to give opinions of value.

Dr. Harrie W. Peirce, Chief Veterinary Health Officer of the State Department of Animal Industry, gave a very comprehensive and detailed report of the functions of his department in dealing with the problems of rabies in domestic animals. He declared that rabies could be eliminated by a ninety day quarantine of all dogs and the use of the immunizing serum.

In the discussion following Dr. Peirce's address doubt was expressed of the wisdom of compulsory immunization of dogs against rabies because of the limited period of efficacy, and hence if a dog which had been immunized should develop the disease after the exempt period had been passed, the public would assume that immunization is not reliable and opposition to this practice would be more general. On the other hand it is advisable to recommend to owners of dogs to have the protective treatment with repetition as may be necessary.

Near the conclusion of the meeting Mr. Kirschbaum, health officer of New Bedford, stated that in 1930 there had been eighty-five dog bites reported in his district, nineteen having been examined by the medical examiner and eight indigent persons had been given antirabic treatment.

He also reported conferences with physicians with recommendations for antirabic treatment of persons bitten by dogs in advance of the report on heads sent to the State Department for examination.

He gave an account of rabies in a bull and three cows which contracted the disease from a stray dog.

The meeting was most interesting and health officers in attendance will undoubtedly be prepared to carry on a vigorous campaign throughout the State.

THE ANNUAL MEETING OF THE HAMPDEN DISTRICT MEDICAL SOCIETY

The Annual Meeting of the Hampden District Medical Society was held at the Hotel Kimball, Springfield, Mass., on Tuesday, April 28, 1931, at 4:15 P. M.

The paper of the afternoon, "The Costs of Medical Care", by Dr. Frothingham of Boston, was well received.

The following officers were elected:

President: G. L. Schadt.

Vice President: F. H. Allen.

Secretary and Treasurer: H. B. Smith.

Censors: L. D. Chapin, G. L. Steele, M. W. Harrington, A. J. Douglas, G. L. Gabler.

Committee on Trials: J. M. Birnie.

Councillors: Fred H. Allen, J. M. Birnie, L. D. Chapin, H. B. Chase, M. D. Chisholm, J. R. Comins, W. F. Dillon, J. D. Henderson, M. B. Hodskins, E. A. Knowlton, S. A. Mahoney, Sr., M. W. Pearson, A. J. Rice, G. L. Steele, H. W. Van Allen, E. P. Bagg, Jr.

THE MASSACHUSETTS ASSOCIATION OF EXAMINING PHYSICIANS

The annual meeting of this organization was held at the Copley-Plaza May 6, 1931.

The subjects discussed were "Methanol Poisoning" by Herman C. Lythgoe, "Gentian Violet Treatment of Burns" by Dr. Robert H. Aldrich, and "The Maggot Treatment of Osteomyelitis" by Dr. Stephen Maddock.

The following named officers were elected: Dr. William A. Bishop of Boston, President; Drs. Cadis Phipps, Frederick W. O'Brien and William E. Browne, Vice-Presidents; Dr. W. Pearce Coues, Secretary, and Dr. R. W. Gwinn, Treasurer.

HARVARD MEDICAL SOCIETY

Dr. M. J. Rosenau presided at the meeting of the Harvard Medical Society held on Tuesday evening, April 28, at the Peter Bent Brigham Hospital.

The surgical service presented the case of a 25-year-old woman complaining of a tender swelling in the right upper chest, of twelve days' duration. Two months after the birth of her first baby, several years ago, she developed a right pleural effusion. This cleared up after six weeks of treatment and its possible tuberculous etiology was not proven. Nine days after her second confinement, seven weeks ago, she had pain in the right upper quadrant radiating to the shoulder. This pain persisted and twelve days ago she noticed a tender mass in the right upper chest accompanied by an evening temperature to 102°.

Physical examination revealed a moist skin with a definite molar flush. There was a raised, tender tumor, 8 cm. in diameter, showing no redness or local heat, in the right infraclavicular region. There was slight dullness with an increase in tactile fremitus at the right apex. The white cell count was 17,000. X-ray plates revealed a definite mass in the region, apparently, not involving the lung.

On aspiration grayish pus was withdrawn which showed a pure culture of acid fast organisms.

The medical case was that of a 41-year-old woman complaining of weakness for four months. Study in the hospital showed that the patient had diabetes mellitus, polycythemia, hypertension and exophthalmic goitre, any one of which could have caused her weakness. The red cell count rose from 6,400,000 on admission to 7,400,000 at present. With rest and proper diet the diabetes and hyperthyroidism have improved, while the hypertension has remained stationary.

Dr. Karl F. Meyer of the George Williams Hooper Foundation for Medical Research, University of California, gave the Cutter lecture on preventive medicine. His subject was "Undulant Fever in the West."

Undulant fever was probably introduced by goats imported from Asia Minor and has been recognized in the western states since 1890. In California the chief sources of infection are goats, hogs and cattle. Statistical study of the disease shows that 96% of the diagnosis of the disease was made by serum study and the clinical course. It is probable that a large number of these cases are questionable, for a person exposed to the brucella organism may show a high agglutinative power yet have no clinical evidence of the disease. The correct diagnosis can only be made by a combined study of the serum reaction and the clinical course. Recent work has shown that blood culture is positive in about 61% of the cases and a positive blood culture may be essential for diagnosis. The disease is most prevalent between the ages of 25 and 44. It is not a disease of children though it may occur. The blood of one group of 1200 children was tested and only one positive reaction found. Certain groups of children were given raw milk without the development of a single case of undulant fever. The reason for this age incidence seems to be that the use of infected milk may lead to some immunity while in later life, when milk is not such a large part of the diet, a virulent dose of the organisms produces an infection. While the brucella is primarily infective it may also have some immunizing powers. The disease occurs more frequently in rural districts and especially in men coming in direct contact with the sources of infection. In Arizona it is more prevalent in the spring, possibly due to the greater opportunity for exposure.

In regard to allergic skin reactions it is known that normal persons without infection may have agglutinins in their blood. In certain occupations 25 to 50% may give a positive reaction. The allergic reaction to skin test is local and constitutional in nature and its severity prevents its use on a large scale. Its significance is not fully understood but probably it indicates some degree of immunity.

The discussion was closed with lantern slides showing the pathology of the disease.

NEW ENGLAND PHYSICAL THERAPY SOCIETY

Notice of Annual Meeting

The next regular meeting of the New England Physical Therapy Society will be the Annual Meeting and will be held at 8 o'clock on the evening of Wednesday, May 20, 1931, at the Boston Square and Compass Club, 448 Beacon Street.

PROGRAM

1. Massage as an Aid to Muscle Training, Miss Mary MacMillan.
2. Sinusoidal Currents, Mr. J. Emery Clapp.
3. Election of Officers.

There will be a special meeting of the Executive Council at 5 o'clock preceding the regular meeting.

Arthur H. Ring, M.D., *Secretary.*

DEMONSTRATION CANCER CLINIC AT LAWRENCE

There will be a demonstration clinic upon the occasion of the regular session of the Lawrence Cancer Clinic, on Tuesday, May 19, at 10 A. M., at Lawrence General Hospital, 1 Gardner Street, Lawrence.

A consultant from Boston will attend. All physicians in the jurisdiction of Essex North District Medical Society are invited to be present and also to bring or send patients for diagnosis and advice.

J. Forrest Burnham, M.D.,
Chairman, for the Committee.

May 6, 1931.

NEW ENGLAND HOSPITAL FOR WOMEN AND CHILDREN

The regular clinical conference of the New England Hospital for Women and Children will be held at the hospital, Dimock Street, Roxbury, on Thurs-

day, May 21, at 8 P. M. The subject will be "The Causes and Treatment of Sterility", and the speaker, Dr. Samuel R. Meaker, of Boston University.

ALICE H. BIGELOW, M.D., *Secretary.*

THE BOSTON DISPENSARY

CLINICAL STAFF MEETING

The May meeting of the Clinical Staff of the Boston Dispensary will be held Thursday evening, May 21, 1931, at 8:15 P. M., at 25 Bennet Street under the auspices of the Division of Research.

PROGRAM

1. "Paroxysmal Hemoglobinuria," Francis M. Thurmon, M.D.

2. "Marriage of Infectious Syphilitics," William A. Hinton, M.D.

Discussion: Doctors C. Morton Smith, Austin W. Cheever, Walter T. Garfield, Harry C. Solomon, Wilson G. Smillie and George H. Bigelow.

Physicians, Medical Students, Nurses and Social Workers are cordially invited to attend.

JOSEPH H. PRATT, M.D., *President.*
ROBERT W. BUCK, M.D., *Secretary.*

NEW ENGLAND PEDIATRIC SOCIETY

New Haven Hospital, New Haven, Conn., May 16, 1931.

Program:

1:30 P. M. (D. S. T.)—Medical and Pediatric Laboratory. Clinical papers and demonstrations.

6 P. M.—Dinner, Faculty Club.

GERALD HOEFFEL, *Secretary.*

NEW ENGLAND ROENTGEN RAY SOCIETY

The Annual Meeting will be held at the Boston Art Club, Boston, Mass., Friday night, May 15, 1931.

A dinner will be served at the Boston Art Club at 6:45.

SCIENTIFIC PROGRAM

Symposium by the Staff of the New England Peabody Home for Crippled Children.

"Some Aspects of Tuberculosis of the Spine." Dr. Edwin C. Cave.

"Extra-articular Tuberculosis." Dr. Joseph S. Barr.

"Tuberculous Dactylitis." Dr. A. H. Brewster.

"The Effect of Heliotherapy on the Peripheral Circulating Blood in Cases of Bone and Joint Tuberculosis." Dr. Gerald N. Hoeffel.

T. R. HEALY, M.D., *Secretary.*

370 Marlborough Street, Boston, Mass.

SOCIETY MEETINGS

CONGRESSES AND CONFERENCES

May 15—New England Roentgen Ray Society. See notice elsewhere on this page.

May 16—New England Pediatric Society. See notice elsewhere on this page.

May 19—Demonstration Cancer Clinic at Lawrence. See page 1071.

May 19—South End Medical Club. See page 1012, issue of May 7.

May 20—New England Physical Therapy Society. See page 1071.

May 21—New England Hospital for Women and Children. See page 1071.

May 21—Clinical Staff of the Boston Dispensary. See notice elsewhere on this page.

June 3—Cardiac Course. See page 854, issue of October 23, 1930.

June 7, 8, and 9—The American Proctologic Society. See page 951, issue of April 30.

June 8—American Medical Golfing Association Tournament; Philadelphia. See page 1066.

June 8-12—Woman's Auxiliary to the American Medical Association. See page 743, issue of April 2.

June 8-14—International Hospital Congress. See page 521, issue of March 5.

June 9—Medical Veterans Meeting. See page 895, issue of April 23.

June 9—The Scientific Session of the American Heart Association. See page 742, issue of April 2.

June 16-19—Catholic Hospital Association. See page 690, issue of March 26.

July 6-11—Medical Clinic, Paris. See page 520, issue of March 5.

July 26-31—Third Congress of the Pan American Medical Association. See page 632, issue of March 19.

July 27—The Post Graduate Course of Ear, Nose and Throat Surgery at the University of Bordeaux, France. See page 951, issue of April 30.

July 27-31—Third International Congress of Radiology, Paris. See page 789, issue of April 9.

Aug. 31 - Sept. 4—Neurologists will meet in Berne, Switzerland. See page 896, issue of April 23.

September 14-17—The American Public Health Association. See page 632, issue of March 19.

DISTRICT MEDICAL SOCIETIES

Bristol North District Medical Society

September 17—Details to be announced.

Plymouth District Medical Society

May 21—See page 1011, issue of May 7.

July 17—Midsummer meeting. See page 1011, issue of May 7.

BOOK REVIEWS

The Pathology of Internal Diseases. By WILLIAM BOYD, M.D., M.R.C.P., F.R.S.C. Lea and Febiger. Philadelphia. 1931. Pp. 888.

If this book were only what its title indicates it would be of ample size to cover the subject with adequacy. However, as the author states in the preface, "In some ways, indeed, it is an illustrated textbook of Internal Medicine written from the point of view not of diagnosis or of cure, but of the mechanism of disease, its why and its wherefore." To attempt to include so much within one volume is foredoomed to bring a certain amount of disappointment, both to the anatomic pathologist, the physiologist, and the clinician. It is planned as a companion volume to the excellent Surgical Pathology by the same author.

The pathological discussions are clearly presented and accurate. With a few statements the reviewer cannot agree, as the one on page 388 that with

suitable material from the pancreas a correct microscopic diagnosis of diabetes mellitus may be made in nearly 100 per cent. of the cases.

Most of the 298 illustrations are excellent.

Studies from the Rockefeller Institute for Medical Research. Reprints. Volume 74. New York. 1931. Published by the Rockefeller Institute for Medical Research.

This volume of reprints from the Rockefeller Institute represents the work carried on in the different departments of the Institute. One article of particular interest is that by Landsteiner and Levine "On the inheritance and racial distribution of agglutinable properties of human blood."

The range of subjects covered is strikingly wide, from the Gibbs-Ewald reciprocal lattice to variations in the plasma cholesterol and cholesterol ester content in hog cholera.

Studies from the Rockefeller Institute for Medical Research. Reprints. Volume 75. New York. 1931. Published by the Rockefeller Institute for Medical Research.

Of particular interest to laboratory workers in this volume of reprints are the elaborate and detailed studies of Pearce and Casey on the blood cytology of the normal rabbit. These studies will prove of great value to those who, in the course of their experimental work, utilize rabbits. A striking case of lipoid nephrosis is reported by MacKay and Johnston and the autopsy is reported by Ehrich.

Pye's Surgical Handicraft: A manual of surgical manipulations, minor surgery, and other matters connected with the work of house surgeons and surgical dressers. 10th Edition. William Wood & Co. 1931. Price $7.00.

This edition of Pye's manual was prepared by the late Herbert Carson and was nearly completed when he died. The edition was finished by Harold Dodd. Three new chapters on venereal diseases and one on x-ray treatment in cancer have been added as well as new sections on hand infections, the injection treatment of varicose veins, Thiersch's method of skin grafting, the treatment of psoas abscess and of ruptured urethra, and the tannic acid treatment of burns. The chapter on anaesthesia has been modified and amplified. Some methods of treatment which are now obsolescent have been deleted. Although many changes have been made to bring the present edition into line with present-day practice, the work is still Pye's Surgical Handicraft and not Carson's. The size of the volume is however only twenty-four pages greater than the previous edition.

Although in some places in order better to explain necessary manipulations abstract surgical questions have been briefly treated, the volume is in no sense an elementary work on theoretical surgery. The subtitle indicates the purpose of the work and the character of its contents. In addition to the new material above-noted there are sections on hemorrhage and shock, bandaging and splinting, fractures, dislocations, wounds, ulcers, and burns, diseases of hip, spine and knee, diagnostic and therapeutic instrumentation of bladder, stomach, and rectum, special minor surgery (eye, ear, nose, throat, and teeth), certain special emergencies (hernia, intestinal obstruction, head injuries, drowning, suffocation, poisoning), urinalysis, and preoperative and postoperative care. The scope of the work may be judged by this brief tabulation of topics. An excellent double-column index of 23 pages greatly enhances the usefulness of the book and makes readily accessible a wealth of material contained in its 617 pages. There are also tables of the 343 illustrations and 22 plates.

House surgeons and general practitioners who do minor surgery will find this a valuable reference manual. Readers will observe methods of treatment different from those which they themselves practice but the underlying principles of the described methods are surgically sound. Variations of this nature are noticed especially in types of splints for the treatment of fractures. The practical character of the work is however well illustrated in this same section; for seven pages are devoted to "measures for prevention of further injury," methods of improvised splinting and immobilization for the transportation of fracture cases. This is a very important consideration which is not infrequently neglected in larger volumes. We would prefer to see described a method for treating fracture of the clavicle other than the Sayre method. The pathology of Colles' fracture is nicely detailed but we would like to see a flexed or flexed-pronated position of immobilization described. Although the necessity of securing dorsiflexion of the foot "to a right angle or even beyond it" in the treatment of Pott's fracture is thrice emphasized (pp. 182-184), it is unfortunate that Plates I and II illustrating the application of a moulded plaster splint show the foot in some plantar flexion (insert between pages 104 and 105). The omission of as valuable a supporting measure as intravenous glucose with coincident insulin injection is unfortunate and conspicuous in a work of such general excellence.

Arterial Hypertension. By EDWARD J. STIEGLITZ, M.S., M.D. Published by Paul B. Hoeber, New York City, July, 1930. Price $5.50.

This book is a painstaking description of arterial hypertension written evidently by a careful and enthusiastic student of this disorder. It is clearly of value to any physician who wishes to become familiar with the ideas held by and the work that has been done by students of arterial hypertension.

The book contains 232 pages of subject matter with a few illustrations, charts and tables. The bibliography consists of 1133 references. There is a bibliographic subject index and a general index. These clearly make the book useful for reference.

Die Eigennamen in der Krankheitsterminologie. By I. FISCHER, M.D. Published by Moritz Perles. Vienna, 1931. Pp. 143.

This little handbook is an extremely useful adjunct to the doctor's library, in that it gives a very complete list of the various diseases and syndromes named after individuals. On the whole, the list is extremely complete. The names are arranged alphabetically, and under each is given the generally accepted synonym, the full name, the date of birth, the place of residence, the date of death of the man whose name was given to the disease, and the full reference to the original description of the disease. This appears to be very complete, and the only omission noted by the reviewer is Christian's syndrome.

BOOKS RECEIVED FOR REVIEW

Practical Dietetics for Adults and Children in Health and Disease by Sanford Blum. Fourth Edition. Published by F. A. Davis Company. 380 Pages. Price $4.00.

Noguchi by Gustav Eckstein. Published by Harper & Brothers. 419 Pages. Price $5.00.

Medical Administration of Teaching Hospitals by Emmet B. Bay. Published by The University of Chicago Press. 136 Pages. Price $2.00.

Diagnostic Methods and Interpretations in Internal Medicine by Samuel A. Loewenberg. Second Revised Edition. Published by F. A. Davis Company. 1032 Pages. Price $10.00.

The Treatment of Asthma by A. H. Douthwaite. Published by William Wood & Company. 164 Pages. Price $2.50.

A Manual of Tuberculosis for Nurses by E. Ashworth Underwood. With an introduction by Professor J. R. Currie. Published by William Wood & Company and E. & S. Livingstone. 272 Pages. Price $2.50.

Studies from The Rockefeller Institute for Medical Research. Reprints. Volume 76. Published by The Rockefeller Institute for Medical Research. 644 Pages.

The International Medical Annual. Edited by Carey F. Coombs and A. Rendle Short. Various contributors. 49th year. 1931. Published by William Wood & Company. 551 Pages. Price $6.00.

The Surgical Clinics of North America. April, 1931. Volume 11, Number 2. Lahey Clinic Number. Published by W. B. Saunders Company. 248 Pages.

The Treatment of Behavior Disorders Following Encephalitis. An Experiment in Reëducation by Earl D. Bond and Kenneth E. Appel. Published by The Commonwealth Fund. 163 Pages. Price $1.75.

Heart Disease by Paul Dudley White. Published by The Macmillan Company. 931 Pages. Price $12.00.

Thirty-Third Annual Meeting of the American Gastro-Enterological Association. Held at Atlantic City, N. J., May 5 and 6, 1930. Published by Paul B. Hoeber, Inc. 169 Pages. Price $3.00.

THE EDUCATION OF TEACHERS FOR SIGHT-SAVING CLASSES

Four universities will offer courses for the training of teachers and supervisors of sight-saving classes this summer, it is announced by Mrs. Winifred Hathaway, Associate Director of the National Society for the Prevention of Blindness. The courses will be given as follows:

Tulane University, New Orleans, La., June 15 to July 24;
University of Chicago, June 22 to July 24;
State Teachers College, Buffalo, N. Y., June 29 to August 7;
Teachers College, Columbia University, N. Y., July 6 to August 14.

Explaining the necessity for more teachers and supervisors of sight-saving classes, Mrs. Hathaway said: "Between 50,000 and 60,000 school children in the United States have such seriously defective vision as to require special educational methods and special eye care. The recent White House Conference on Child Health and Protection recommended the establishment of sight-saving classes as the best method of educating these pupils.

"At present, there are fewer than 400 sight-saving classes in the United States. Inasmuch as the National Society for the Prevention of Blindness estimates that at least 5,000 classes will be needed to provide facilities for educating all visually handicapped children, it may readily be seen how widespread is the need for qualified teachers and supervisors.

"In sight-saving classes, through the use of special large type books, movable desks, ideal lighting, and special teaching methods, children with little vision are not only given the same sort of education that children with full vision receive, but they are also taught how to conserve their remaining sight. Educators have found that many children who had been accounted stupid or sullen displayed excellent intelligence and pleasing dispositions as soon as their defective vision was recognized and they were placed in sight-saving classes."

DOCTORS AS NURSING SCHOOL TEACHERS

More than 16,500 physicians lecture to student nurses or act as instructors in the schools of nursing, according to the records of 1,379 such schools. Numerically, they form one of the largest groups to come into contact with student nurses as teachers.

This is shown in a study of the nursing school faculty, made by the Committee on the Grading of Nursing Schools. It is incorporated in a report sent out in May to the respective schools, as part of the Grading Committee's nation-wide survey of nursing education.

The largest groups of schools have from six to fifteen physicians on the teaching staffs; 82 schools have eight; 81 schools have ten; 84 schools have thir-

teen; 81 schools have fifteen. The range is from one to fifty physicians per school.

In a small proportion only of the schools, however, is the bulk of the teaching in the hands of the physicians. In one school, for example, a doctor is paid a substantial sum to devote his mornings to teaching the student nurses, and he lectures on fourteen different subjects. In some others the doctors may give many of the basic science courses, as well as lectures in their own specialties.

The accepted practice in the majority of schools is for the physician to give lectures on different types of cases. A nurse faculty member is usually present. After each lecture, she follows up the work with class discussion, and teaching on the nursing techniques involved. Sometimes three or four doctors will give the lectures on one subject during the term, sometimes one gives the entire series.

Schools express themselves as keenly appreciative of the services doctors give as teachers, but some say that difficulties are sometimes encountered. Irregularity on the part of the lecturers is a serious one. Since the students' time is routed for their service in the hospital and their care of the patients, this presents a difficult administrative, as well as educational problem.

The best type of physician instruction is seen to include:

1. Lectures planned from the point of view of the student nurse; including the nature of the disease; the nurse's rôle in the commonest methods of treatment; the special symptoms to watch for and report; what the nurse can do to make the patient comfortable.

2. Follow-up of lectures by bedside clinics for the students. This is a practice that has been neglected of late years, it is reported.

3. Encouragement of students in asking questions.

About three per cent., or 522, of the physicians who teach are paid for their services. In most cases payment is small. Three or five dollars for a lecture is the most common rate. In a Maryland school, for example, two of the 21 physicians listed as instructors received pay, $50 and $40, for the term. In some cases the fee is considerable. One Boston physician receives $2,000 a year for his lectures.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS

For April, 1931

The total number of cases of communicable disease reported to the State Department of Public Health in April 1931 was nine thousand five hundred and eleven, a figure considerably below the fourteen thousand and eighty-eight reported in April of 1930. This diminished prevalence is due to a very decided decrease in the number of cases of diphtheria, measles and German measles which were reported to us.

Five cases of anterior poliomyelitis were reported, a figure somewhat higher than the usual figure for April.

Only one hundred and eighty-two cases of diphtheria were reported, which is the lowest number reported for April in the twenty-five years of which we have accurate records. This is the sixth consecutive month for which this low record has been maintained.

Only eight cases of epidemic cerebrospinal meningitis have come to our notice as against eighteen for April 1930.

Two thousand two hundred and twenty cases of measles were reported in April, which was less than half the figure for April of the previous year.

Lobar pneumonia, pulmonary tuberculosis and gonorrhea have the usual figures for the month with four hundred and eighty-three, three hundred and eighty-six and five hundred and twenty-eight cases respectively.

Scarlet fever was reported one thousand five hundred and eighty-six times, which is a rather elevated figure for April.

Twelve cases of typhoid is the next lowest April figure for typhoid in over twenty-five years of typhoid reporting. The lowest figure was ten cases reported in 1928.

Whooping cough was reported six hundred and fifteen times, which is not far from the average figure for April, and considerably lower than the number reported in April of last year.

Chicken pox, German measles, influenza, mumps and non-pulmonary tuberculosis have about the usual prevalence for this time of year, according to our records.

Syphilis with three hundred and seventy-two cases shows the increase over preceding years which is to be expected with the better reporting which this disease is receiving.

RARE DISEASES

Anterior poliomyelitis was reported from Athol, 1; Boston, 1; Lowell, 1; Milton, 1; Worcester, 1; total, 5.

Anthrax was reported from Boston, 1; Peabody, 1; total, 2.

Encephalitis lethargica was reported from Brookline, 1; Cambridge, 1; total, 2.

Epidemic cerebrospinal meningitis was reported from Ayer, 1; Greenfield, 2; Lynn, 1; Malden, 1; Medford, 1; Northampton, 1; Worcester, 1; total, 8.

Leprosy was reported from Boston, 1.

Malaria (Therapeutic) was reported from Boston, 1.

Pellagra was reported from Boston, 1.

Septic sore throat was reported from Beverly, 1; Boston, 6; Brookline, 2; Cambridge, 1; Fall River, 1; Greenfield, 1; Haverhill, 1; Maynard, 2; Melrose, 1; Northampton, 1; Plymouth, 2; total, 19.

Trachoma was reported from Boston, 1; Brockton, 1; Lowell, 1; North Adams, 1; total, 4.

Undulant fever was reported from Shelburne, 1.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

	Cases in Entire Pop.				Case Rates per 100,000 Pop.		
	April 1931	April 1930	Proso. Index*	Epi. Index†	April 1931	April 1930	Expected Rates‡
All Causes	9511	14088	—	—	222.4	331.1	—
Ant. Polio.	5	3	6	.8	.1	.1	.1
Diphtheria	182	283	322	.6	4.3	6.7	7.5
Ep. C. S. Men.	8	18	5	1.6	.2	.4	.1
Measles	2200	5751	5425	.4	51.4	135.2	126.9
Pneu. Lobar	483	597	490	1.0	11.3	14.0	11.5
Sc. Fever	1586	1206	1178	1.3	37.1	28.3	27.5
Tbc. Pul.	386	476	418	.9	9.0	11.2	9.8
Typh. Fev.	12	20	16	.8	.3	.5	.4
Whooping Cough	615	1315	1530	.4	14.4	30.9	30.8
Chicken Pox	1007	857	—	—	25.0	20.1	—
German Measles	632	1106	—	—	14.8	26.0	—
Gonorrhea	528	534	—	—	12.3	12.6	—
Influenza	31	45	—	—	.7	1.0	—
Mumps	767	809	—	—	17.9	19.0	—
Syphilis	372	343	—	—	8.7	8.1	—
Tbc. O. Forms	42	72	—	—	1.0	1.7	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above: 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal*.

‡Calculated from the Prosodemic Index.

THE AWARD OF THE TRUDEAU MEDAL

One of the interesting features of the meeting of the National Tuberculosis Association was the conferring of the Trudeau medal.

This was awarded to Dr. Allen K. Krause of New Mexico, who has been recognized as one of the leading authorities in tuberculosis.

NOTES FROM THE *MASSACHUSETTS GENERAL HOSPITAL NEWS BULLETIN*

At a meeting of the Board of Trustees held on February 4, 1931 it was voted to name the nurses' home Walcott House and to place therein a bas relief of Dr. Walcott presented to the Hospital by Mr. Robert T. Jackson.

At the same meeting of the Board of Trustees the following resolutions on the death of Mr. Hunnewell were adopted:

"The Trustees of the Massachusetts General Hospital desiring to honor the memory of the late Henry S. Hunnewell wish to have spread upon their records the following:

"By the recent death of Henry S. Hunnewell, the Massachusetts General Hospital has lost one of its friends of long standing. He served as a member of the Corporation from 1904-1931, holding the offices of trustee from 1904 to 1914, and Vice-President from 1923 to 1931, and he had agreed, to the very sincere satisfaction of the Board of Trustees, to accept the Presidency at the next annual meeting in February. As an architect, he had planned and supervised the construction of two of the most important and, on account of his design, two of the most useful buildings at the McLean Hospital at Waverley. Besides these services, Mr. Hunnewell, for many years, had, whenever called upon, given with the greatest generosity to all the Hospital's needs. His successors, as trustees, desire to put upon their records that he was one of those few men who, in every generation, have made it possible for the Massachusetts General Hospital to accomplish the public purposes for which it was founded.

"The trustees wish to express their deepest sympathy to all the members of his family for the great loss they have suffered."

A meeting of the Trustees of the Hospital and the Staff was held on March 18, 1931. A report was made in regard to the Baker Memorial Hospital and also a statement about the proposed George Robert White Memorial Building. Plans were considered for the erection of a single large building to replace the lower wards of the hospital and to furnish new x-ray and operating departments, and a staff dining room. The report was a preliminary one as final plans have not been made.